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## THE ECONOMIC POTENTIAL OF THE USSR

A lecture delivered by  
*Dr. Demitri B. Shimkin*  
at the Naval War College  
October 24, 1949

My discussion of Soviet economic potential embraces three subjects: the general characteristics of Soviet economy, the effects of World War II and postwar reconstruction, and Soviet military-economic capabilities.

**General characteristics:** Seven features of the economy of the Soviet Union appear to me to be distinctive: great mineral wealth; a large rapidly growing population; limited agricultural resources; inadequate development of transportation; vigorous, highly centralized economic management; a technology still very dependent on the West but rapidly maturing; and a pattern of economic growth similar to that of the United States. Let us discuss each of these in more detail.

**Soviet mineral wealth:** The known mineral reserves of the USSR show great strength, adequate for very long term self-sufficiency, in at least twenty-one minerals. These include the basic fuels, coal and petroleum, as well as most of the major ferrous metals, namely, iron ore, chromite, manganese, nickel and vanadium. Abundant reserves have been established for many non-metallic minerals: andalusite, asbestos, bromine, flourspar, graphite, gypsum, phosphates, potash, salt, sodium sulphate, and sulfur and pyrite. The non-ferrous and rare metals, however, are not well represented: only magnesium minerals, the platinum group, gold, and niobium and tantalum are definitely present in large quantities.

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Serious weakness in resources appears to be confined primarily to the non-ferrous and rare metals: aluminum-grade bauxite, bismuth, cadmium, lead, silver, thorium, cerium and rare earths, uranium and zinc. The concentrations and quantities of reserves that are known for these minerals appear to be far from adequate to supply Soviet needs. To this list of deficiencies can be added two ferrous metals, molybdenum and especially tungsten, and a few non-metallics. They include abrasives and bearing jewels: corundum, diamonds, rubies and sapphires, as well as piezo-electric quartz crystals and high-grade talc.

Three final remarks will help clarify the mineral position of the Soviet Union. First, a distinction must be drawn between reserves and production. Thus, while Soviet reserves of the fuels and of such minerals as andalusite are great, current production is relatively modest. Secondly, the distribution of mineral deposits throughout the territory of the Soviet Union is very uneven. The greatest single concentration of deposits—about 25% of the total—is found in the Urals; Eastern Siberia and Kazakhstan are also rich, except in petroleum. In contrast, most of European Russia, especially the Central Industrial Area (Moscow) and the Leningrad District, is lacking in first-class deposits. Even the Ukraine has serious deficiencies, for its resources are limited to great deposits of coal, iron ore, manganese, salt, gypsum, phosphates and kaolin. Thus the problems of mineral development are inextricably woven with the development of transportation, shifts of population, and the industrialization of remote, often inhospitable regions. Thirdly, Soviet mineral supplies must be viewed in relation to the entire Soviet sphere. In some cases, the satellites can provide large quantities of deficient minerals to the USSR—talc and tungsten being outstanding examples. In general, however, the satellites are weak in known resources, and their needs, should industrial development be seriously undertaken, would represent a measurable drain on Soviet mineral resources.

**Human resources:** The population of the USSR is large and fertile. It grew from 147 to 174 millions between 1926 and 1939, jumped to 193 millions with territorial gains in 1939-1940, then suffered a loss of 25 millions during World War II. This loss has unquestionably been recovered by the present time; by 1960, the population will have risen to a new high of 225 millions, and by 1970, to over 240 millions. Such a fertile population provides great resilience to the disasters of war, even atomic war, epidemics and famine. However, the large percentage of children and hence of women with small children in the population means also that the effective labor force of the nation is smaller than for countries, like the United States, with a more mature population. Furthermore, the Soviet Union is still at least half rural. In consequence of these facts, the non-agricultural labor force of the Soviet Union in 1948—a basic measure of industrial potential—was about 73% that of the United States, and some 50% greater than that of the United Kingdom.

It should also be observed that the population of the Soviet Union is heavily concentrated, with fully 80% residing west of the Volga River. Out of some 21 cities with more than 300,000 inhabitants in 1939, only 3 are east of the Volga-Caspian line. Thus, human, mineral, and, as will soon be shown, agricultural resources are widely separated in much of the Soviet Union. The cardinal importance of transportation within the Soviet economy is clearly evident.

**Limited agricultural resources:** As is well known, the food-producing capacity of the Soviet Union is limited in relation to a population of over 200 million increasing over 1% annually. Normally, the Soviet Union can provide a relatively small surplus of grain, but is faced by chronic deficits of fats and proteins. However, at least one year out of five since 1885—most recently, 1946—has been marked by a serious crop failure, due most commonly to drought.

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Furthermore, Soviet livestock has been seriously affected by World War II, after a slow recovery from the mishaps of collectivization. In all, livestock numbers today scarcely exceed those of Imperial Russia on the eve of World War I. Finally, increasing population pressure in Eastern Europe constantly decreases the possibility of aid for the Soviet food supply from that source.

Consequently, the Soviets have become increasingly concerned with the promotion of agriculture. The provisions of the Fourth Five-Year Plan proved to be inadequate, particularly in regard to the technical improvement of agriculture. They were therefore supplemented by a special Three-Year Agricultural Plan (1949-1951), stressing especially the increase of livestock and fowl. In addition, the Soviet government inaugurated in October 1948, a long term plan for the period 1949-1965. The most spectacular feature of this plan is the determination to plant extensive shelter belts between the Ural and Don Rivers, in order to protect crops against dessication from Central Asiatic hot winds. Less spectacular, but probably more important, are various directives modifying crop practice to insure better water retention in the soils of the Volga and Black Earth regions. This great reforestation plan presents serious difficulties; its success will be dependent not only upon the degree of Soviet effort and investment, but upon nature.

**Limited development of transportation:** For its maximum economic growth the Soviet Union requires a farflung, high-capacity system of transportation. Its population is concentrated west of the Volga River. Most of its mineral resources are found in the Urals and Asiatic Russia. Large areas lack vital resources: the sole source of petroleum east of the Urals and north of Central Asia is found on Sakhalin. Food deficits exist in the Central Industrial Area and North Russia, in Central Asia and in the Soviet Far East. These must be met by imports from the Volga and North Caucasus regions in the west, and from Western Siberia in the east.

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Yet transportation is weakly developed in the USSR. Railroads move the overwhelming part of the freight, including bulky cargoes such as petroleum, timber, grain and ores. But the railroad network is well developed only west of the Volga; Moscow is its heart, with eight major lines and seven large belt lines and laterals radiating from the capital. To the east of the Volga, the Trans-siberian Railroad to Vladivostak, with feeders to Magnitogorsk and the Kuznetsk Basin, and the line from Kirov to Molotov, alone are double-tracked. Genuine networks exist only in the Urals and Kuznetsk Basin. The important lines serving Central Asia are all single-tracked, and of light construction.

The Fourth Five-Year Plan contemplated rehabilitation of the war damaged lines in the west, and new construction, notably the Magnitogorsk-Kuznetsk Basin or South Siberia Line, in the east. While the evidence is not clear, it appears that rehabilitation has been largely accomplished, but that new construction lags.

The other forms of transportation in the Soviet Union are definitely of secondary importance. Among waterways, only the Volga-Caspian system, ever faced with the problem of dropping water level, is of great significance. Pipelines and highways have but a rudimentary development.

Finally, it is important to note the adverse effects of Soviet climate on transportation. Even the Caspian-Volga system is closed by ice between December and April. Railroad capacity is sharply reduced by winter snow and cold, as well as by spring thaws. A glance at the effects of temperature alone, based upon experience tables of the Alaska Railroad is revealing. In January, for example, the capacity of the entire Soviet network east and north of the line Moscow-Stalingrad-Lake Balkhash, inclusive, falls to 70% of its warm-weather capacity. From Krasnoyarsk to Vladivostok, the reduction is even greater, ranging from 40 to 50%.

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Such variations in transportation capacity are reflected, of course, in the annual fluctuations of the entire Soviet economy.

**Soviet economic management:** Economic planning and administration in the USSR has been vigorous and purposeful. From the beginning of the Five Year Plan, the same strategic concepts have been dominant; primary emphasis upon heavy industry, maximum development of the secure area between the Volga and Yenisei Rivers, achievement of self-sufficiency in critical materials, and ease and rapidity of conversion from civilian to military production in times of crisis.

While major errors, such as in the handling of collectivization, marked the early history of Soviet economic management, evidence of increasing flexibility and maturity in management is growing. The devaluation of the ruble was achieved without notable setback. In 1947, practical considerations led to a change of emphasis in investment from the eastern regions to the Ukraine. And in minuter affairs, a more practical attitude is also manifest: Thus, in manufacturing, specific attention is being paid to working-unit layout, to promote worker efficiency by reducing waste motion. Instrument and spare parts carts, belt lines and pneumatic transporters are diminishing the great amount of manual effort and hence the overstaffing characteristic of Soviet plants. Diversification of product, systematic testing of more adequate samples, and greater attention to repair and maintenance are now evident, particularly in the Soviet automotive industry.

**Technology:** Presumable Soviet mastery of the atomic bomb provides radiant advertisement of their research and development. I must admit to considerable surprise at the early date of this achievement. The cause for this surprise may lay as much in the over-estimation of the complexities of the secret, as in under-estimation of Soviet technology and industry.

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In the materials I have worked with, several of the old characteristics of Soviet technology are still evident. First is the careful review of every American development. For example, seven of the projects of the research plan of the All-Union Scientific Research Institute of the Auto-Tractor Industry (NATI) for 1949 call for the detailed testing and investigation of American tractors. Second is the lag between plan and performance in the mass production of new models; not until late 1948 were all of the basic truck models to be adopted in the postwar period actually in production. Third is Soviet reluctance to cease production of obsolete equipment. In 1948, nearly half of all Soviet truck output still consisted of the venerable GAZ-AA and ZIS-5 trucks, of 1928-1932 vintage.

At the same time, I must report major new trends in Soviet technology. The most important development, one which approaches in my mind the significance of the atomic bomb, is the preparation and publication in 1946-1949, of the monumental Soviet handbook of machine building (**Mashinostroyeniye Entsiklopedicheskii Spravochnik**, 14 vols.) This handbook, in 14 volumes, is equivalent to such American publications as the American Society for Testing Materials and the Society of Automotive Engineers handbooks. Based on a comprehensive digest of foreign and Soviet experience, it provides technological standards, uniform testing procedures, and methods of computation and design for major sections of Soviet industry. It provides the foundation for a flexible standardization of materials and processes. The ultimate effects of such technological standardization—one of the prime advantages of American industry over those of Britain and the Continent—can scarcely be overestimated.

Other new trends are greater emphasis upon diversification and production to meet specialized requirements; lack of such an emphasis has been one of the basic weaknesses of Soviet industry.

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Thus large numbers of new alloy steels and of specialized equipment, such as highly mobile 6x6 trucks with independent suspension are now under development or in production. Furthermore, as I mentioned previously, the testing of new models and processes is being conducted on a far wider scale than in earlier years.

Also important are indications of a new approach in Soviet technology: stress upon fundamental engineering solutions to pressing problems as opposed to crude improvisation. For example, the Soviet government has been concerned for many years with the use of local fuels, such as peat and firewood, for automotive vehicles. During World War II this problem was met by bulky, very inefficient gas producer equipment installed on ordinary trucks, busses and tractors. In contrast, the Soviets in August, 1949, published the specifications and plans of a new, experimental, 6-ton, steam truck, the NAMI-012, with a 3-cylinder, 100-hp engine of original design.

Finally, the Soviets are developing a number of shortcuts to difficult technical problems. Thus, they have immensely reduced their requirements for nickel, vanadium and titanium by utilizing naturally alloyed ores from Khalilovo, Kusa, Yelizavetinski Rudnik and other deposits, for the production of a wide series of low-alloy steels and malleable cast irons.

**The Soviet Economy During World War II and the Period of Reconstruction.**

In 1940, the Soviet Union was the greatest economic power in Europe except for Germany. Its population totalled nearly 200 million; its industrial labor force, some 30 million. In that year, it produced 141 million metric tons of coal plus 25 million metric tons of lignite; 31 million metric tons of petroleum, 18.3 million metric

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tons of steel, 5.8 million metric tons of cement, 119 million metric tons of grain, and 208,000 trucks and cars. Its electrical capacity reached 11.3 million kilowatts by the end of the year. Its railroads, with 30,000 locomotives and 570,700 two-axle and 191,700 four-axle freight cars, carried a traffic of 415 billion ton-kilometers or 282 billion net ton-miles, second only to the United States. A large program of modern—in the case of armor and rockets, highly advanced—ordnance production was under way, although many phases of Soviet technology remained a decade or more behind the West.

The war with Germany led to enormous losses, totalling possibly 25% of the entire national wealth of the USSR. In addition to a direct and indirect population loss of some 25 million, economic losses were staggering: about 25% of the metal-cutting machine tools, 34% of the saw-mill capacity, 30% of the cattle, 71% of the hogs, 60% of the coal production, 55% of the steel production, 44% of the electrical power capacity, 48% of the freight cars, and 53% of the locomotives—all of those were destroyed or heavily damaged. Nevertheless, complete economic mobilization, ruthless cutting-back of the civilian economy; careful allocation and rigid control of raw materials, transportation and power; and bold evacuation of endangered manufacturing capacity to the Urals, Volga Region, Western Siberia and Central Asia kept alive the fighting capacity of the Soviet Union. From 1942 on, Lend Lease also provided indispensable assistance. The value of Lend Lease never exceeded 10% of Soviet domestic production as a whole, but in many critical areas of military supply—aluminum, signal equipment, trucks, etc.—it provided two-thirds and more.

Through all these measures, the Soviet Union was able to maintain and develop a major military effort. It maintained an average of some 13 million men and women in its armed forces. Its military production amounted to approximately one-third that of the United States. However, because its allies relieved it of the need

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for significant naval forces or heavy bombardment aviation, the USSR was able to approach the United States in the production of a number of weapons. During the last three years of the war, annual Soviet output of tanks and self-propelled artillery averaged 30,000; of aircraft, primarily fighters and ground-attack aviation, 40,000; of artillery of 20mm caliber and higher, 120,000. At the same time, the expansion of basic production continued, both to ameliorate war losses and to relieve critical bottlenecks. Coal and lignite production in the unoccupied regions was expanded by more than 40 million metric tons. Manufacturing in the east increased sharply, so that the Urals alone were able to produce 40% of the total ordnance of the Soviet Union. The output of aluminum, copper, lead, tin, tungsten, and vanadium rose far above pre-war levels. Several important railroad lines were constructed, especially to improve communications between Central Russia and the Caucasus. Yet retrogression also took place in the deep rear. Excessive pumping and lack of drilling cut petroleum output by more than one-third. Lack of maintenance reduced railroad capacity everywhere. Thus, all in all, the Soviet Union emerged from the war seriously weakened.

Less than a year after the end of the war, in March 1946, the Soviet Union proclaimed a new Five-Year Plan of economic reconstruction and expansion. First priority was allocated to heavy industry and transportation. Nearly half of all the expenditures were to go to the reconstruction of devastated areas, while about one-sixth were to be concentrated on the railroads.

What have been the achievements of the Fourth Five-Year Plan to date? According to official Soviet statistics, published in January 1949, national production, after a rise of 27 per cent in 1948 over 1947, had exceeded the 1940 level by 16 per cent, a rate of progress in excess of the plan. Productive increases for the period 1945 through 1948 have, however, been very different in dif-

fering parts of the national economy. The patterning of these dissimilar increases is instructive: least change has been claimed in the size of the non-agricultural labor force, a rise of 23%. Other indices of total national output are said to have risen somewhat more: electrical power capacity by 36%, and freight car loadings by 43%. Next in scale have been the alleged increases in mineral production—copper, coal, petroleum, steel, pig iron, zinc and lead—which range from 34 to 59%. Claimed increases in grain output total 79%. Even higher are the claims for construction materials: 71% for timber, 252% for cement. Increases in manufacturing top the list: 90% for cotton cloth, 158% for trucks and cars, and 622% for tractors. Further steady increases have been claimed (July 23, 1949), for the first six months of 1949.

Two questions arise from these claims: are they true? If so, how have the Soviets been able to achieve them?

It is my belief that these claims are substantially accurate, although affected moderately by the inflationary bias of a disproportionate rise of manufacturing over raw materials production. I estimate, relying in part on the work of my colleagues in the Russian Research Center, that absolute production figures for 1948 were approximately the following: coal, 140-150 million metric tons; lignite, some 50 million metric tons; petroleum, 29-31 million metric tons; steel, 18-20 million metric tons; aluminum, some 160,000 metric tons; copper, 150-160,000 metric tons; lead, 125,000 metric tons; zinc, some 150,000 metric tons; nickel, excluding that in naturally alloyed ores, some 14,000 metric tons; grain, about 100 million metric tons; power capacity, 12-14 million kilowatts; and truck and car production, some 260,000 units. In these regards, production exceeds 1940 levels by moderate to large amounts. However, other branches of the national economy—railroad ton-mileage, housing, livestock, and consumers' goods—probably lag at levels 20% or more below the 1937-1940 peak. One must note that the con-

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struction of 19 new workers' houses at Voroshilovgrad was still front-page news in the Soviet press in the summer of 1949.

The mechanisms of Soviet recovery are partly explicable. Five factors appear to have been important. First, the expansion of Soviet agricultural land area through the absorption of new territories on the Western frontier. Second, the increased availability of many minerals through wartime expansion of output as noted above, through territorial acquisitions, specifically potash and petroleum from Poland, and through importation from the satellite regions in Europe and Asia. For nine minerals, supplies available from these regions exceed Soviet domestic production. These minerals include antimony, barite, bismuth, bromine, cadmium, flourspar, potash, talc and tungsten. Significant amounts of bauxite, beryllium, coal and lignite, cobalt, copper, gold, graphite, lead, magnesite, magnesium chloride, metallic magnesium, and mercury, molybdenum, petroleum, phlogopite mica, salt, uranium and zinc, are also procurable from these peripheral regions. The resources of East Germany and North Korea are especially important for the Soviet Union. The third factor is the large-scale reconversion of a machine tool stock which was relatively lightly damaged during the war and which was then augmented, certainly above pre-war levels, by Lend Lease and war booty. The fourth factor has been the quantitative and, above all, the qualitative improvement of the industrial labor force resulting from the demobilization of the armed forces. The fifth factor, less certain than the others, appears to be a shift in the Fourth Five-Year Plan from a balance between reconstruction in the West and new investment in the East, to a concentration of effort largely on the West. This was foreshadowed by the Special Plan for 1947, which cut back investment particularly in railroad construction. It is most clearly shown by comparison of the claimed gains in production for the Ukraine in comparison with the rest of the Soviet Union during 1948. A few figures tell the story:

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Item	Percentage Increase 1948 over 1947	
	Entire USSR	Ukraine
Total Output	27	43
Pig Iron	22	41
Steel	28	74
Coal	14	22
Electrical Power	16	43
Tractors	104	122
Caustic Soda	25	49
Mineral Fertilizers	43	72
Meat	25	34
Soap	45	96

Clearly, much of the weight of recent Soviet recovery can be ascribed to the revival of the Ukraine. Thus the balance of Soviet industrial output is again shifting westward, a phenomenon of obvious political and military significance.

Three final points may be considered in regard to recent Soviet economic growth; the degree of self-sufficiency of the entire Soviet sphere, the scale of growth in comparison with other industrial nations, and the comparative reserve of economic potential. First, it must be emphasized that the Soviet sphere cannot be regarded as self-sufficient *on any appreciable consumption level*. Serious deficiencies exist for at least 20 minerals, ranging from antimony to diamonds to zirconium; for other raw materials, such as cotton, rubber, and leather; for fats and proteins; and for many manufactures, electrical equipment, tubing, etc. Second, it is important to bear in mind that nations other than the Soviet Union, particularly the United Kingdom, Canada and Poland have exhibited marked economic gains in recent years. I estimate that the current production of the Soviet Union is now roughly equal to that of the United Kingdom and Canada together, possibly 40% that of the United States.

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Third, it is critically important to distinguish between current production and capacity. The Soviet Union is operating under forced draft, with relatively little reserve. The United States, although, more fully occupied than in 1940, has measurable slack in its economy. Thus the present economic potential of the United States, despite astounding Soviet progress, is still three to four times greater than that of the USSR. But this potential could be reached only by total mobilization over one to two years.

### **Soviet Economics Capabilities.**

The Soviet Union has substantially emerged from its period of reconstruction from the ravages of the war. By great persistence, and by ruthless use of its resources and those squeezed from the satellites, it has been able to achieve a faster rate of economic growth than I, for one, anticipated. Continuing growth must be anticipated. Bottlenecks in terms of mineral and other raw materials deficiencies, of agricultural setbacks, and of weaknesses of transportation may reduce the rate of growth. The Soviet Union must also consider to an increasing degree the needs of its old and new satellites; greater moderation in its policies of colonial exploitation of these territories would certainly be practical wisdom, as Jugoslavia has shown. However, the greatest indeterminant in future Soviet economic development arises in its leadership. Will Stalin's successor, when the time comes, be able to drive his country with equal determination and success? Russian history since the time of Peter the Great arouses some doubts.

Nevertheless, prudence requires full expectation of continued Soviet economic growth. The only answer to this challenge that I know of is the continued economic and political growth of the entire Western community of nations. The United States alone can no longer expect to meet the threat of Soviet aggression in spare moments.

In the fields of economic management and technology, the historic Soviet patterns of highly centralized planning and primarily imitative development are continuing. But Soviet techniques of management, Soviet research and development are unquestionably improving and maturing. The lessons learned in World War II, the treasure trove of information gained through Lend Lease, are being digested. Along with the atomic bomb, we must anticipate a Soviet proximity fuze, anti-aircraft guided missiles and other answers to the well-proclaimed threat of the high-altitude, unescorted bomber. Yet the effects of intellectual intimidation and of self-imposed isolation should not be discounted; weaknesses will exist and must be searched for.

In case of war, Soviet economic mobilization must be expected to be as far reaching as in World War II. Soviet ability to accept brutal losses, to recover from virtual disaster must not be forgotten. A great margin of economic and technological superiority still must be ascribed to the United States but the time for an easy discounting of Soviet potential has long since passed.

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## **THE PROBLEMS OF CHINA**

A lecture delivered by  
*Dr. T. F. Tsiang*  
at the Naval War College  
October 21, 1949

The subject on which I have been asked to speak today is a very large one. Everybody knows that China has many problems, some of which are both complicated and important. It is impossible within the limited time at my disposal to mention, not to say discuss, all the problems of my country. I will talk mainly on a problem which seems to me to be basic to all problems. If we understand this one problem, we will have the background for understanding many of the others. I hope I can contribute some light towards a better understanding of my country.

The problem which I wish to discuss with you today is the problem of poverty. The depth and breath of this problem are so well-known to you that I do not need to cite statistics. We Chinese are a nation of farmers. Aside from the frontier regions in the Northeast, Northwest and Southwest the average farmer cultivates in northern China less than three acres and in southern rice-land China less than two acres. On such tiny plots of land the farmer works hard, as hard as any human being can be expected to work, but he is subject to the mercies or rather cruelties of climate which inflicts on him frequently either a flood or a drought. He is also subject to pest which consumes his crops. He has made no progress in the selection of seeds, improvement of cattle, use of fertilizers, and marketing for about a thousand years. The marvel is two-fold. In the first place, it is a marvel that the Chinese farmer attained such a high level of agriculture more than a thousand years ago. It is also a marvel that he has continued to practice the same agriculture for these thousand years.

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Dr. T. F. Tsiang is Chairman of the Chinese Delegation to the United Nations General Assembly.

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As a result of the small size of Chinese farms and the lack of progress in agricultural arts, probably forty percent of the Chinese population live under conditions of food, clothing, and housing which must be characterized as sub-human.

Even in recent decades, famines, killing a million people at a time, have occurred and will most likely occur again.

Poverty is the root of all China's ills. It permeates all life in China. It darkens the whole horizon. Without having lived in the midst of such poverty, you cannot imagine what it can do to the bodies, minds and souls of people. What people call poverty in this country would be and should be called wealth in China. The Chinese variety of poverty is simply unimaginable to the average American, and for this reason, the American people have not, up to the present, understood the problems of China.

The agricultural and industrial resources of China cannot be compared to the resources of the United States, the Soviet Union or the British Commonwealth of Nations. Even with the highest development of natural resources, the Chinese people cannot look forward to a day when they could live as well as people in this country. Nevertheless, with the resources we have, we Chinese could develop in China a standard of living much better than what we have today.

Let me now take up the causes of Chinese poverty. I would like to say at once that the Chinese people are neither stupid nor lazy. I have travelled in many countries and observed carefully the behavior of peoples, and I am convinced that the Chinese people are second to none in intelligence and industry. Chinese mechanics, who were but yesterday totally ignorant and even afraid of machines, have won the respect of foreign engineers who have seen them at work. The cause of Chinese poverty does not lie with the character of the Chinese people.

One of the indisputable causes of China's poverty is the size of China's population. We do not have accurate statistics, but all students of the subject agree that China's present population is somewhere between four hundred and five hundred millions. Before the eighteenth century China, at no moment in her history, had a population larger than seventy million. The phenomenal growth of population in China occurred in the 18th century. The 17th century was a period of banditry, civil war and famine. During its course China's population must have been thinned out. The 18th was a century of peace, and on the whole, good government. If the official records of the government of that period are to be believed, it will be found that China's population had more than tripled in the course of a century. At the beginning of the 19th century China already had reached the population figure of three hundred million. That is a phenomenon unprecedented, both in the world's history and in China's history. No country, based on agriculture, whether in the East or in the West, ever faced the gigantic problem of feeding a population of three hundred million. Now it is between four hundred and five hundred million.

Another cause of Chinese poverty is the stagnancy of the arts of production and distribution. From the historical sources which we have, including pictures of rural life painted a thousand years ago, I have come to the conclusion that China has not made any advance in the industrial and agricultural arts during the past thousand years. I am not in a position to explain this stagnancy. The West in recent centuries has made splendid progress in science and technology. The question naturally arises—why have the Chinese not done the same thing? It is a question asked by many people. It remains today without an adequate answer. I can only make a suggestion.

The answer must be found, it seems to me, in the type of culture which China has developed. Under the cultural conditions

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in China, the men of intellect and learning have not thought it worthwhile to pay any attention to practical matters. It was beneath the dignity of an educated person to soil his hands in labor. Education and culture have been totally divorced from agriculture, industry and transportation. In ancient times China produced great engineers who built, among other things, the Grand Canal and irrigation systems in the Northwest and on the plains of Szechwan. In ancient times some of the Chinese emperors and lesser rulers did pay attention to practical arts. But during the last thousand years the brains of the Chinese have failed to render any help to the toiling hands and legs and aching backs. Confucian culture is rich in the understanding of human nature and social relationships, but it is at the same time woefully deficient in the understanding and mastery of material and animal nature.

How can we solve the problem of Chinese poverty? I do not intend to go into a theoretical discussion of this question. I will only summarize the actual steps which have been taken so far and which point the way towards a right solution.

With modern education in China a revolution, more significant than the political revolutions which have been so voluminously reported in the papers, has occurred in the outlook on life of the Chinese intellectual class. Modern science and modern engineering have caught the imagination of the people during the last thirty years. Together with this, the intellectual class in China have come to regard the poverty of the country as a shame and an unnecessary shame at that. For the first time in one thousand years the mind of China has returned to grain, plants and farm cattle, to water and soil, to coal and iron, to cotton, wool and silk, to brick and cement, to rivers, highways and railways. Before the beginning of World War II, there was a feeling of hope in China. One of China's historians wrote in 1935 that Chinese civilization did not need to follow the curves of ancient Babylon-

ian, Egyptian or Roman-Greek civilization. On the contrary, the mastery of science and technology would give China a new cycle of history, more prosperous and happier than any golden age which tradition attributed to some remote period in the ancient history of China.

Take for example cotton. The soil and climate of China could make the country self-sufficient in cotton, but as late as 1932 one of the greatest causes of China's imbalance in international payments was the heavy import of American and Indian cotton. From 1932 onwards, the Government of China, with the help of some American and Chinese cotton experts, found new and improved cotton seeds in the United States. They imported these seeds, distributed them among the farmers and guaranteed them a profitable return on their crop. By 1936 China became self-sufficient in cotton. Such an achievement is unprecedented in all China's history. The farmers in North China, where cotton was grown, benefited from it. The whole nation benefited from it. It was the first time for a thousand years that the Chinese farmer found that his Government could and did confer on him a benefit.

During the time when some scientists and government bureaus were busy with cotton, others worked on rice and wheat. Soon after the National Government established the capital in Nanking in 1926, it set up a Central Agricultural Research Institute. The scientists in that Institute experimented with varieties of wheat and rice from China as well as from foreign lands. In time they produced a new variety of wheat and a new variety of rice which increased the yield by eleven to thirteen percent. The new seeds could not be imported; they had to be reproduced in China. To cover the whole wheat and rice areas with the new varieties would require many years. This beneficent work was unfortunately interrupted by the war, but the seeds are still there. From the work of

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these scientists, the rice and wheat growers can expect to increase their crops by eleven to thirteen percent.

The Northwest of China is a region with good soil but a thin population. In ancient times it was considered the granary of China and was for many centuries the center of the Chinese empire. After the 9th century it began to decay. Nobody today knows exactly all the causes for the decay of China's Northwest. Some attribute it to climatic changes. In 1921 a famine occurred in Shensi, one of the Northwestern provinces, which caused the loss by starvation of more than a million people. A great Chinese engineer who was a native of that province, convinced first the local government and later the National Government that the decay of the Northwest was due to the neglect of the irrigation systems which served the province in the great Han and Tang Dynasties. He started to repair some of the ancient canals in the region. Later he constructed new canals and reservoirs. His work and the work of his successors have been supported by the National Government since 1931 up to the present moment, not omitting even the long years of war with Japan. In 1941, '42 and '43 I was in charge of budgeting in the Central Government. It was my pleasure to find the funds so that the construction of irrigation in the Northwest might not be stopped by the war. Today the Province of Shensi is permanently secured from famine, because in that province, with a steady supply of water, the land can yield all the food that the people there need.

A similar constructive program was carried out in public health, and in highway and railway building, with similar good results. This approach to the problem of China's poverty may be called the constructive approach.

We could attack the problem of poverty in China by taking a different approach. We could start by redistributing the wealth

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of the country, particularly land. I, myself, am in favor of agrarian reform, and I am sure that most of you would also favor it. Let us therefore discuss agrarian reform both as a cure for China's poverty and as a matter of social justice.

It has been many centuries since the agricultural land of China was concentrated in the hands of a small number of big landlords. Except in the frontier regions of Manchuria, China does not have large estates. In most of the provinces a man owning twenty acres of wheat or rice land would be considered a big landlord. In my own district there was a big landlord who owned 135 acres of rice land. He was the top man in a district of a million and two hundred thousand people. When he died, his land was divided among his ten sons who received each a little over thirteen acres. In China inheritance has not been by primogeniture but by equal division among all the sons, and now, by government legislation, among all sons and daughters. The practice of equal division among the sons has prevented the rise of big estates. Nevertheless, there is inequality in the country and exploitation of the tenant by the landlord. Such inequality and such exploitation should be abolished.

The problem of redistribution of agricultural land in China has been studied by many Chinese and American agricultural experts. With the exception of the Communists, all other students of the subject favor a program of agrarian reform whereby the tenant will be aided by the government to buy the land which he cultivates through a series of annual payments. Very large land estates exceeding one hundred acres might be subject to partial expropriation. The valuation to be put on middle-sized estates, that is, below one hundred and above twenty acres, would be so fixed as to mean a partial expropriation of the current market value of the land. In general terms, these are the features of an

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agrarian reform which impartial students of the subject would favor

The Communists in China advocate outright expropriation of all the land that is cultivated by tenants. This is their economic revolution. They have concentrated all their propaganda on this one issue. In fact, they have nothing else to offer in the economic field. The Communist program may be good politics but it is not good economics, and it certainly cannot be justified on grounds of social justice. If carried out, fifty million people, whose land will be expropriated, would be left destitute. No government, Communist or otherwise, could provide these people with jobs or support them on a dole. Should they be allowed to starve? In the second place, if such a program were carried out, the actual average benefit on the tenant would be less than one-third of an acre. You would have, as a result, such a minute division of the land whereby each farm family has a little land, too much to be thrown away and too little to sustain a family. Nevertheless, the Communists have used the scheme to win the political battle in China. I personally anticipate that, as a result of communism in the rural areas, there will be a long period of turmoil and village feud, accentuated by famine on a large scale.

In China, there is no land of feudal origin. Whatever land the people own, has all been bought and paid for. Outright expropriation cannot be justified on the ground of the historical origin of land ownership in China. In this respect the Chinese problem of agrarian reform is totally different from the same problem that existed in Ireland in the 19th century, or in Russia and other eastern European countries in the 20th century.

The best scientific judgment of the experts favors a program of agrarian reform whereby the peasant would be aided by the Government banks in purchasing the land which he cultivates.

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This has never been tried, because the war with Japan put a stop to all constructive effort. I personally believe that even in the midst of war, this program should be pushed forward. I am afraid that some leaders in China used the war as an excuse for postponing reform.

However, the war did come. It was real. It was gigantic. It did tax China's human and natural resources to their utmost limit.

For eight long years Free China used the western part and less developed half of the country as a base to fight against Japanese invasion and blockade. The world has not begun to understand the economic meaning of that long war and blockade. Before the war, China had no economic surplus or reserve productive power. Economically, China had no capacity whatsoever for war. As a result, the Chinese people fought the war by deepening their own misery. This economic aftermath of the war indeed served as fertile soil for the growth of communism in China.

The Government, in fighting the war, resorted to printing paper money which in turn culminated in wild spiral inflation. I think the Chinese Government could have done better in war-time finance. Difficult though the situation was, China did not have to come out of the war in such a state of demoralizing inflation as she did. She could have done better, though not much better. In the first place, in western China, which was Free China, industry has not been developed to any high degree. There was very little wealth for the Government to tax. In the second place, the type of economy prevailing in China did not lend itself to rationing. Chinese wealth, such as there was, has been mainly agricultural production and that production consisted mainly in subsistence production, not production for the market. Most farm-

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ers grew the food for the consumption of their own families. Only a small percentage has ever been brought out to the market, and then only to the nearby village or town market. Had the government tried to ration food in China during the war, we would have had to station a policeman in every farmer's family to see to it that he and his wife and children did not consume more than the ration quota.

Meanwhile, inflation has wiped out the whole middle class. It has inflicted untold sufferings on teachers, scientists, writers and government employees. Among my friends and relatives, there are many whose death has been hastened by malnutrition or who have been permanently incapacitated by the effects of malnutrition.

I have read and heard many explanations for the present sorrowful state of China. Some put the blame on the reactionaries. Some criticize Generalissimo Chiang Kai-Shek as shouldering the chief responsibility. Leaders do have their responsibility, but I submit that an objective study of the total situation in China would declare that the sad plight of China today is mainly the result of the war, on top of a poverty, which was deep-rooted, vast and old.

Post-war relief, particularly through UNRRA, did something useful. I know it from personal knowledge, when I directed post-war relief and rehabilitation in China. UNRRA spent in China altogether \$670,000,000.00. It was a big sum. Seventy percent of this sum came from the good people of this country; Great Britain, Canada, Australia, India, and several Latin-American countries, notably Brazil, all contributed. To these generous donors, the Chinese people will always be grateful. But the per capita relief in China, as compared with the per capita relief in Poland, Czechoslovakia, Ukraine, and Greece is equivalent to one to thirty. It was extremely meagre. Furthermore, it was hampered by the Com-

munists. They destroyed railways faster than I could rehabilitate them, for the Communists reasoned that the misery of the people was to be their strongest ally.

Now I wish to trace the relation between poverty and the development of democratic government in China. Let me say at the very beginning of this discussion that the average man in China is not interested in politics or government. Food, clothing and housing for himself and his family are already more than he can possibly take care of. He and his ancestors has never voted or ever had a voice in the selection of governors or in the determination of national policy. This only means that the common man in China is customarily inactive in politics. But is he by tradition and habit a democrat, a man who respects other people's rights and who wants his own rights respected by others, or is he by nature a slave or a dictator? Can he be induced or educated to be active in politics? As raw material for democracy, are the Chinese good or bad? There is no doubt about the answer to these questions. The common man in China is a convinced individualist and resents government interference or regimentation. He is at the same time a reasonable being and is accustomed to talk things over with his neighbors and ever ready to abide by the general will of the community. For many centuries, he has handled local affairs in the democratic spirit, though not through the same democratic form of voting which the West has developed. The common man in China can be educated to participate in modern democratic practices; the speed of learning will be determined by the rate in the rise of his standard of living.

The educated people in China all stand for democracy, although they may be divided in the interpretation of this word or that and in the methods of its realization. Among them are many upright, patriotic, and progressive people. If they were organized,

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they could lead the nation towards the goal of economic and political modernization.

When the First National Revolution took place in 1911 the dominant thought of the intelligentsia in China was for liberal parliamentary government as practiced in the United States and Western European countries.

Unfortunately, the First National Revolution only succeeded nominally. Aiming at democracy, our revolutionary fathers actually obtained anarchy and civil war and the rule of the most ignorant and reactionary war lords. From 1911 to 1925 we fell from the height of a very brief happy period of political honeymoon into the depth of fifteen years of utter despair.

Before 1911 and in the early years of the Republic, there were a few voices warning China against the experiment of a republican, democratic government. I might mention Dr. Goodnow, who had been Professor of Political Science in Columbia University and who later became President of John Hopkins University. In the early years of the Chinese Republic, Dr. Goodnow was the constitutional adviser to the Chinese Government. He published a memorandum in 1912 or 1913 advocating constitutional monarchy for China. I might mention another foreign observer, namely, Sir John Jordan, who, having been the British Minister to China for many years, knew China very well. He too thought that China was totally unprepared for an experiment in parliamentary government.

Among the Chinese themselves there were outstanding scholars who were skeptical about republicanism, not because they did not appreciate the merit or worth of democracy but because they felt that China was not ready for a republican form of government. The leader of this school of thought was the late Mr. Liang

Chi-Chao. He produced an historical statistical table showing in each historical instance how civil war followed every change of dynasty. He warned China that of all the ills of mankind, civil war was the worst and he predicted that the overthrow of the Manchu Dynasty and the establishment of a republic would again usher in a long period of civil war. In previous periods of history, China lived in actual isolation from the rest of the world, and therefore, civil war, though disastrous in its domestic consequences, had no international effect. In modern times, Mr. Liang said, a long period of civil war would afford foreign enemies the opportunity which they desired.

I returned to China in 1923 after ten years of study abroad. I was curious to know why the common people joined the armies of the rival war lords. I found that the poverty of the masses drove them into the armies. The pay of a soldier, meagre though it was, served as adequate attraction. What the war lords stood for and fought for meant nothing to that common soldier. He was there to earn his upkeep.

At the time of my return to China, the war lord at the top was General Tsao Kun. He was most illiterate. It was a great puzzle to me how that man could achieve the power which he had. One of my friends, much older than myself and better-informed, told me the story. General Tsao Kun, while inspecting some of his troops, found a soldier weeping. He stopped to question the man and he was told that the man had just received news from home about the extreme illness of his father. General Tsao immediately said to the man, "If your father is so ill, you must go home. I hope your father will recover. If he does not recover, here, take fifty dollars, buy him a good coffin and bury him in due ceremony and then return ." By such means General Tsao won the loyalty of his troops. The story, you can understand, was spread most skilfully. The appeal of the war lords of that day was not

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on any political principle. It was simply and entirely on grounds of personal loyalty. And for some fifteen years China's armies were built up and wars were fought on such feudal connections.

Then there came the Russian Revolution. Here was a country more similar to China than the United States or Great Britain or France. Russia likewise had had centuries of absolute monarchy, and a large population with a high degree of illiteracy. And this country succeeded by establishing a one-party dictatorship. The example of Russia impressed many people, among whom was Dr. Sun Yat Sen, the father of the Chinese Republic. He reorganized his party, the Kuomintang, along the lines of the Russian Communist Party. But his education and early life had implanted in him deep and sincere convictions on the desirability of western liberal democracy. He tried to square the circle by adopting Russian means to, what we might call, American aims. In other words, he wanted to establish a one-party dictatorship in China to prepare the country for ultimate democracy. He worked out an elaborate program of preparation. Dr. Sun died before his party came to power, but his successors in the party have always proclaimed that they wished to carry out Dr. Sun's program. The opponents of the Koumintang have accused it of insincerity. Objectively, there is room for debate as to whether the Kuomintang has done well or not in preparing the country for democracy. It would be totally untrue to assert that the Koumintang made no attempts in that direction. It would be also untrue to claim Kuomintang's attempts in democracy have been well-considered. Let me describe some of these attempts.

At the beginning of the war with Japan, the Government instituted the so-called Central People's Political Council. At first the two hundred members were all appointed by the Government. With each renewal of its membership a larger percentage was elected until in the end its membership was entirely elected. A similar

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institution was organized in the provinces and districts, beginning with Government appointees and ending in a total membership of elected representatives.

The Central People's Political Council performed good service. The quality of its membership and its debates could be compared favorably with parliaments in other countries. It made the Government conscious of strong currents of public opinion against which it could not go. It also put up to the Government certain standards of administration below which it could not fall and retain the confidence of the people. The provincial and district councils did not do so well. As the percentage of elected representatives increased, the average quality declined. In some places, these councils contributed to the inefficiency and corruption in local government. In this respect, the experiment during war-time was not final. Elections were hurried. Issues had not been thoroughly discussed before the elections. The machinery of registration and polling was at places cumbersome. The political groups did not have time for organization. These faults were partly due to war-time conditions and partly due to the manipulations of the politician in control.

The road to democracy in China has been and will remain a difficult one. The poverty of the people is a great obstacle. While democracy is not a sure cure for China's poverty, the development of free political life will be helpful in solving many of China's economic problems. Furthermore, political democracy is an end in itself. Nobody has claimed or can claim that democracy is only good for the rich countries. I have no doubt that the Chinese people wish to and can march towards democracy. I wish only to caution people against trying to reach the goal in too much of a hurry. And I would emphasize that every improvement in the standard of living of the people would automatically smooth the way to democratic government in China.

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Let me summarize what I have said so far. In the first place, the problem of poverty is the basic problem in China. Secondly, before the war, both the government and private agencies did valuable constructive work, which pointed out the way to a solution of the problem of poverty. Thirdly, I have tried to show that communism with its chief emphasis on agrarian reform has adopted a program of expropriation of the landlords, a program which is economically unsound and inflicts great injustices on a large class of land holders. In the fourth place, I have tried to show that in spite of deviations, the Chinese people will march towards democracy, the chief obstacle of which is again the problem of poverty.

Communism, instead of leading the people of China to a better life, will make China a satellite of the Soviet Union. It will expose China to Russian political and economic exploitation. As the people find this out, and they are sure to find out in time, the opposition to communism will become stronger and stronger.

In the second place, the Communists have begun to impose a totalitarian regime under which the individual is lost in the process of public control and regimentation. At the present moment they have not yet consolidated their power, and therefore, have not attempted to impose absolute control on the life of the individual. But as time goes on, there is no question that the communists will tighten the screw of their one-party dictatorship. In this respect the Chinese Communists are as fanatical as their brethren in Eastern Europe.

The Communists talk a great deal about social justice and a classless society. I acknowledge there is social inequality in China which should be removed, but long ago the founder of the Chinese Republic pointed out that a class war in China was almost meaningless. For China suffered not so much from inequality of wealth as from *universal* poverty. What there is to re-distribute

among the people is not wealth but poverty. For this reason Dr. Sun warned the Chinese people against class war. He urged the people to unite in a supreme effort at large-scale economic development based on the utilization of modern sciences and technology and the capital and experience of the industrially more advanced nations. There can be no doubt that the ideal set before the Chinese people by Dr. Sun Yat Sen was both progressive and statesmanlike.

Communist control of China will make cooperation between China and the western democracies impossible. As a consequence, a Communist China will not be able to utilize foreign capital and foreign technical know-how, both of which are essential to a program of rapid economic development in China.

Another consequence of Communist control in China would be to turn China's back on democracy, sacrificing thereby some of the finest fruits of modern civilization.

To sum up all what I have said: China's basic problem is poverty and the chief solution is economic development. China's immediate problem is the overthrow of the Chinese Communists. Unless this is done, China will enter the dark ages, and, with China, in the course of time, all Asia with its one billion population—half of the human race!