



RESOURCES AS AN ELEMENT OF NATIONAL POWER

Captain E. S. Powell, USN

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Reviewed by: Colonel J. H. M. Smith, USAF

Date: 5 December 1960

INDUSTRIAL COLLEGE OF THE ARMED FORCES  
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COL. SMITH: Gentlemen, this isn't an ordinary introduction, this morning. In the first place, Captain Powell, our <sup>first</sup> speaker, is a member of the faculty and doesn't deserve an introduction. In the second place-- actually, in the first place still--what I want to do is to introduce Captain Powell's study, which is Unit III, Resources, which begins this morning.

I also, now in the second place, want to take the opportunity to make myself known to you as Director of the Resources Division, which is responsible for the study; and tell you that Captain Powell and I will enjoy very much working with you here and in your seminars to make this an interesting and informative study.

In the third place, I want<sup>ed</sup> to use a vu-graph this morning to put Unit III into perspective. However, I'll use a word picture instead.

Just very briefly, you have already seen where Unit III fits into the curriculum in the various briefings that you have already had. I would like to say, however, that the Resources Unit will deal with both natural and human resources--the basic elements that go to make a modern industrialized nation.

We will be showing you the amounts, sources, and the problems involved in resources and in providing them for these nations. We will be dealing not only with the United States and our allies, but also with the Soviet Union and its captives, as well as the uncommitted nations of

the world.

This study is strategic in its approach, in that we feel that we will have an opportunity to examine the basic materials which are at the heart of the current world struggle.

And then, finally, this study also begins a concrete study of those materials that become the raw materials for the rest of your studies this year, and particularly for the final problem, Unit No. IX.

So, gentlemen, in Navy terms, Captain Powell will launch Unit III.

CAPT. POWELL: Admiral Patrick, Gentlemen: Welcome to Resources.

(CHART 1)

Now, in this study of human and natural resources we want you to examine the ethnic, cultural, and religious background of peoples; to study social structures and national aspirations; to look into demographic trends; take a look at labor-management relations and see what effect technological advances are having on these human relations. And then we want you to examine the raw materials position of various nations around the world. All of these are elements of national strength which contribute to the power position of the world today. During the next few minutes I intend to subject you to just a few of the elements of both human and natural resources.

First we will look into the human resources which make up elements of national strength.

(CHART 2)

Now, in any meaningful review of human history we must take a

look at man's progress over an extended period of time. The written record is only about 5,000 years old. But the record of man's durable tools and his works and his rubbish is reputed to be over 300,000 years old.

Tribes of man by 1960 have raced ahead or lagged behind in this process until now they are straggled out over many stages in a long column of progress. The rear of this column is at a point which was passed by the head of the column some five or ten thousand years ago.

For example, the alphabet is known to 80 percent of mankind today, and yet the alphabet came into use 5,000 years ago. Actually, only religion and tools of some sort are used by 100 percent of the human race.

But so much for a long view of history.

In taking a short view, one author had this to say: "Man learned a long time ago that one way to settle an argument--one of the most efficient and economical and relatively painless ways of coming to a decision--was to clout the other man with a brick bat. If you knock out his brains, you get done what you became only frustrated in trying to do with words and reason."

Today we find two opposing camps in the world. On the one side there is a group of nations committed to communism. On the other side there is a group of nations making up about an equal number of people who are dedicated to opposing communism and enhancing the dignity and freedom of the human race. In the middle we find still another large group of nations committed to neither side.

So here we have a situation that needs an explanation. In the course of our study in this unit we will attempt to examine the various factors which relate human resources and natural resources to national economies and national strengths.

Let's look at manpower first--its meaning, its application, and its role in a nation's destiny.

Every country and every government has to make its own decisions about how best to use its manpower. In 1935, you may remember, Mussolini sent his troops into Ethiopia to enforce his demands for oil rights or on some other rather obscure pretext. The Emperor of Ethiopia, Haile Selassie, is said to have mobilized his manpower for war in these words:

"The country is now mobilized. All men and boys able to carry a weapon report for duty. Women with babies, the very old, and the very young--stay at home. Married men bring their wives; others bring any convenient woman. Any man found at home will be hanged."

Direct and simple! All the necessary elements of a manpower mobilization order are there.

Of course we can't use such an order, because our civilization and our economy, as well as our culture, are very complex and involved; and we like to think that we are a little farther advanced in the scale of human history.

We must plan for the proper use of our manpower for periods of peace, for cold war, for limited war, and for all-out general war.

Since a part of our human resources is manpower, what do we mean by this term? In the broadest sense, the manpower of a nation is defined as all persons capable of nationally useful work. It is not the total population. Population becomes manpower only when it consists of people of working age, educated and trained to perform useful work, and physically and mentally able to do so.

(CHART 3)

~~Now~~, You may recall the five M's of mobilization: materials, machines, money, management, and manpower. Among these, of course, manpower is rather special, because it is a nation's greatest productive resource, and is directly related to each of the other four M's.

Materials are discovered, produced, and used by man. Machines are invented, built, and operated by man. Money has no use, no meaning, and no value except to man. Management is the mind of man at work.

Now I'd like to mention five basic principles of manpower which are rather significant. They give us a better understanding of the role that human resources play in the power of a nation.

(CHART 4)

First: To survive, a nation must be able to feed itself. A certain portion of a nation's manpower must be engaged in food production or supply. In the Soviet Union, for example, this is about one out of every two. In other parts of Asia it's as high as three out of four. In the United States it's about one out of ten.

Our second principle: Mechanization releases manpower from agri-

culture to other fields. This is obvious when we realize that the mechanization of our farms has gone hand in hand with mechanization in our industry to increase our standard of living. With almost 7 percent of the world's population here in the United States, we are producing about 40 percent of the world's total goods and services.

A third principle: Manpower is a limiting factor in any future war.

The capability to wage war is limited by the quantity and quality of the population of a nation at the beginning of the war. Machines, but not humans, can be created in a relatively short period of time.

Modern war must be fought by a manpower team of two--the Armed Forces and industry. Our motto here at the Industrial College recognizes that "Defense and Industry are Inseparable."

The major portion of a nation's manpower is needed in the civilian economy, of course, to convert raw materials into supplies and weapon systems. But certainly there must be an optimum balance in the division of manpower between the military on the one hand and the essential civilian economy on the other.

A fifth principle: As a factor of national power, the quality of manpower is certainly more important than quantity. No longer can we compare nations on a man-for-man basis. We must evaluate the quality of a nation's skills, its leadership, its morale, its technical progress, its health, and its level of education. These are some of the factors that measure the power of a nation. India, with some 400 million, can't be compared with the United States and our 180 million in the power picture

of nations of the world.

Now let's take a look at the people of the world and see how total population does play an important role as a source of national power.

(CHART 5)

Here is a chart showing the growth of the world's population. Prior to 1800 the population of the world was relatively stable. The curve then is fairly flat. In the last 150 years we see a gradual rise in the population.

It took about a hundred years to double the population of the world--  
*between 1860 and 1960*  
~~to double the population of the world--1960 here back to 1860.~~

It might be significant to note that, for the first time in the history of the human race--for the first time in 300,000 years--the population of the world will double during the lifetime of many people living today.

The population of the world today is almost 3 billion. It's growing at the fantastic rate of 50 million per year. This is what is known as the population explosion.

Some demographers go on to predict that by the year 2000 there will be nearly 6 billion people on this planet. Others go on to predict that by 2050, in less than a hundred years, there will be 14 billion people.

(CHART 6)

You have probably heard it said that in 500 years the number of people on the earth will equal the total number of square feet of total land area. It isn't any wonder that our search for real estate on the moon is starting today.

Large population does not guarantee power. Many other factors are involved. You will soon learn about other demographic factors that affect the power role. For example, the proportion of the old people, young people, size of the labor force, males and females, the death rate and the birth rate, health statistics, and education standards--all these must be examined in order to relate population as an element of national strength.

To understand the full significance of these demographic factors, we must know not only the census breakdown, but their rates of change.

(CHART 7)

~~And~~ Here's a chart showing the population of large areas of the world.

It's worth noting that in the Chinese area we have 631 million. In all of Southeast Asia we have 636. I'll come back to this figure in a moment. Compare that to the 191 million in North America, 193 million in South America, 280 million in all of Africa, 217 million in the Western European complex, 96 million in East Europe, and 200 million in the Soviet Union.

(CHART 8)

Now let's take a look at the world's population in a little different way. Here we see that the two columns are relatively equal. The Communist world shows 950 million, and the free world 919 million.

We can call the rest of the world "uncommitted" and we see that they add up to about 890 million. So here is the world divided into the three equal parts, as I mentioned earlier; and the struggle begins.

Within a generation, I think we will see where the pressure of this

uncommitted population falls in the world's power pattern. Note that the 636 million that I mentioned earlier in Southeast Asia is broken down into 114 million assigned to the free world bloc, and 522 million assigned to the uncommitted bloc. And this is based on ties with the West, such as SEATO, etc. Also note that Africa and the Middle East are all identified in the uncommitted bloc.

(CHART 9)

Here we see a chart showing how closely these people live together. Note the areas where density of populations is the greatest. In the Netherlands there are about 850 people per square mile. Some of these statistics are rather interesting. In England and Wales and Belgium there are about 750 per square mile; in Japan over 600, in the United States 57, in the USSR 23. Compare that to Egypt. Egypt, one of the most densely populated areas of the world in the fertile Nile Valley, has 1700 people per square mile.

It is always interesting to look at the world as a whole pie, and then divide it into different segments for specific purposes. Let's do this with race, religion, and languages. First, race.

(CHART 10)

Here we see a chart showing that 4 out of 10 people of the world belong to the white race, 26 percent yellow, 24 percent brown, and the balance Negro or American Indian.

(CHART 11)

Next we see how religion is spread around the world. About one-

third of the world is Christian. Almost an equal number are Buddhists. The balance are Hindus, Moslems, tribal religions, Judism, and a large percent unknown.

Since religion is a means for the expression of a faith, it is inherent in all men everywhere. You remember the chart which shows that religion began some 20,000 years ago. All mankind is at least influenced by it.

As you know, historically, religion has always had both a unifying and a dividing effect within and among nations.

(CHART 12)

Here we see languages. There are 2800 languages identifiable and used throughout the world. Nearly one-half of the world, 44 percent, speak a language extending from an old oriental civilization. Thirty-six percent speak languages of Western civilization, such as English, Russian, Spanish, French, etc. The balance speak some other language.

As you study the cultural factors of the human race, you will learn what effect these factors have on the behavior of nations.

Culture, as you know, has a definition which is very short: "Historically derived regularities in behavior that distinguish one group from another."

At a dinner of fried fish in Japan, where the trout is fried alive, a Japanese might say of an American: "What a barbarian! He starts to eat his fish immediately instead of sitting there and looking at it for ten minutes, as any civilized person would." Japanese people have had

for over 2000 years a mode of living and a pattern of culture which is very individual and very different from other communities anywhere.

I remember in China in 1936 how hard it was to understand the oriental mind in the simple matter of advertising. For example, a package of cigarettes open, with four/sticking out of the package would mean to the Oriental mind that the package contained only the number which could be seen, in other words, four. Of course he's not going to buy a package with only four cigarettes. Therefore, the Chinese advertisement would always show a package of cigarettes completely open, with twenty cigarettes showing and easy to count. A closed package of anything was seldom advertised. It had to be open, with all the contents showing.

Much of our knowledge of culture and the role it plays in the power position of nations has been gathered only in recent years. As an example, the matter of differences in culture came sharply into focus just prior to the creation of Pakistan. As you will recall, Pakistan was created out of India as a separate state for the followers of Mohammed.

The difference between the Muslim and Hindu cultures shows two very distinct and frequently antagonistic ways of life. In an interview with a French journalist, Eve Curie, in 1937, Mohammed Ali Jinnah, the leader of the Muslims in India, explained these differences in this way:

"How can you ever dream of Hindu-Moslem unity? Everything pulls us apart. We have no intermarriages. We have not the same calendar. The Moslems believe in a single god, and the Hindus are idolatrous. Like the Christians, the Moslems believe in an equal-

itarian society, whereas the Hindus maintain the iniquitous system of castes, and leave heartlessly fifty million Untouchables to their tragic fate, at the bottom of the social ladder. Now, again, the Hindus worship animals. They consider cows sacred. We, the Moslems, think it is nonsense. We want to kill the cows. We want to eat them. Another thing: No Hindu will take food from a Moslem. No orthodox Hindu will even touch Hindu food if the shadow of a Moslem, or the shadow of a Hindu of a lower caste, has polluted the bowl."

Some three years later, in 1940, Jinnah stated again that Muslim India was a distinct nation, which must be recognized. He said:

"We are a nation of a hundred million; and, what is more, we are a nation with our own distinctive culture and civilization and literature, art and architecture, customs and calendar, history and tradition, aptitude and ambitions. In short, we have our own distinctive outlook on life and of life."

Seven years later, Jinnah became the first governor general of independent Pakistan, created at the same time that India became independent.

Just a brief mention of health and education.

Vast improvements in these fields, of course, have been made in recent years. Science is having its impact on sanitation and medicine, and this will increase still further the rapid population growth.

Although this progress is great, not all peoples have long life-expectancy.

(CHART 13)

Here is a picture of a camel and a boy in the Middle East. The camel will live to be 50 years old and the boy 40. Other life expectancies are--

Africa 35, India 27, United States 70, Soviet Union 47.

(CHART 14)

Let's take a look at literacy for a moment.

As you know, illiteracy in the United States is practically nonexistent. In Russia illiteracy below the age of 25 is also practically nonexistent. Every Russian who is illiterate is usually over 25. This progress in education in the USSR is a remarkable achievement, and it has contributed directly to the scientific advances made by the Soviet Union.

On this chart we show Mexico 50 percent and India 16 percent.

One of our own outstanding scientists, Dr. Edward Teller, commented recently: "Ten years from now the best scientists in the world will be found in Russia. I'm not saying that this will happen unless we take this or that measure. I am simply saying that this is going to happen." An ominous warning, to say the least.

~~Now,~~ All of these comparisons of race, cultures, religion, languages, skills, health, and education give you some idea of the diverse characteristics of the almost 3 billion people which make up the world. In the survey of human resources, these factors play an important role in determining the power position of a nation today.

Now we are about to leave human resources, to examine the natural

resources which are used by man for his own existence and material benefit.

Remember that a raw material is considered a resource only when a use for it has been developed.

(CHART 15)

Natural resources may be broken down as shown on this chart. They are normally divided into two broad categories--mineral and agriculture. The minerals are broken down into the metallic and non-metallic. Under metallic we find the ferrous and the nonferrous minerals.

In the ferrous class the most important, of course, is iron. There are also the ferrous alloys, or the additive metals, such as manganese, tungsten, chromite, and nickel. Other metallic minerals are nonferrous. Note the different categories on the chart,-- base, light, precious, and rare.

Examples of these: In the base metals we find lead, copper, and zinc. The light metals, aluminum, magnesium, titanium. The precious metals, of course, are gold, silver, and platinum. The rare metals are uranium, radium, cadmium, beryllium, and many others that you seldom hear about.

The non-metallic minerals include the solid and liquid fuels, from which we derive most of our energy. Other non-metallic minerals are the building materials, fertilizers, abrasives, chemicals, etc.

~~Now,~~ ~~W~~ater deserves special mention as a natural resource. Only in recent years has there been a critical look taken at our water supply,

and the future looks rather bleak.

Water plays a dominant role in the lives of humans. Stop and think of the many uses for enormous quantities of water.

1. It serves as a source of power, in both hydroelectric and steam power plants.

2. It is used in vast irrigation projects, for farming.

3. It is used extensively in industry. Steel making requires a tremendous amount of water--some 65,000 gallons of water for every ton of steel.

4. Domestic use in the home.

5. Public use completes our picture of the use of water.

Our other broad category of natural resources is agriculture. Here we find the many products of the vegetable and animal kingdoms used for food and industry.

Now that we have established these broad classifications of natural resources, let's take a look at our natural resources position. To begin this examination we go back just half a century.

At the turn of the century we were just emerging as an industrial nation. Since 1900, in sixty years, our population has nearly doubled; our GNP has increased tenfold; and our materials consumption, in constant dollars, has increased from 8 billion to 20 billion every year.

Up to World War II the production of raw materials not only kept pace with, but exceeded, our material consumption. We exported heavily and profitably. But look what has happened.

(CHART 16)

Our consumption requirements now exceed our materials production. Where the lines cross on this chart we ceased to be a materials-surplus nation and became a materials-deficit nation in the production field.

Remember, then, that we must now consider that we, as a nation, have entered into a new relationship with the rest of the world. Whereas we used to be a net exporter of almost everything, we are now a net importer of many things.

Take a look at some of the items that focus on our new position. We used to export lead, copper, and zinc. Now we are the world's greatest importer. Lumber, petroleum, and iron ore are being imported more and more each year. Aluminum production 15 years ago found us using 80 percent of our own bauxite. Now we are using less than 20.

These are just a few examples of our position relative to our self-sufficiency in raw materials. The nature and the growth of our economy have caused a materials problem, which is becoming increasingly serious as the years pass by.

What can be done about it? Four courses of action come to mind.

First, we can discover new reserves of minerals.

Second, we can use known reserves better. Examples of the second thing are, taking oil from shale, magnesium from the sea, aluminum from clay, steel from taconite.

Third, we can shift from a scarce mineral to a more plentiful one, such as using plastics for lead, and aluminum for copper.

Finally, we can get more materials from abroad. Certainly the ready access to the natural resources of other countries must be maintained.

The importance of all of these courses of action is obvious for the exercise of national power. Many of these are being accomplished, and it is particularly important to note how vital it is to have ready access to the material resources of other countries.

~~Now,~~ certainly, one measure of national power is the ability to wage war. Adequate resources have always been essential in the use of force.

In prehistoric times man got by with flint and stone. The medieval knight needed iron for his armor and his sword. England used timber and gunpowder to rule the seven seas. Now the modern military force requires steel, aluminum, oil, rubber, uranium, etc., etc. Today just about all the natural resources known to man are required in the modern weapon systems.

Therefore, to maintain this capability to wage modern war, a nation must have access to raw materials and an extensive modern economic system which can convert these raw materials into power.

But natural resources contribute to national power in other ways too. Possessing raw materials can give a nation a certain measure of power if those raw materials are required by others. For example, the Arab nations have oil, and we in the West are the big user. Argentina has beef, and Britain is the largest customer. Ceylon is rich in rubber, desired by all nations.

Manufacturing nations have always been great powers too. The abil-

ity to turn raw materials into manufactured goods gives a nation a much greater measure of power.

This has been true of England, France, the United States, Germany, and Japan. The products of the United States are now in great demand throughout the world, and this gives us a measure of power. The key to this power is access to large quantities of raw materials and our great industrial complex.

(CHART 17)

Here is a chart which shows the relative position of the free world against the Soviet empire in the production of raw materials. Note that this is a comparison of production, and therefore is in one sense a comparison of the industrial activity of the two worlds.

Without going into detail for each of these resources, let's take a look at just one--iron. The 75 percent shown here is broken down into 35 percent in North America, 30 percent in the Western European industrial complex, and 10 percent in the balance of the free world. Iron, it seems, is the most abundant of all metals. It is found on every continent everywhere.

Because of our large production of iron ores, high iron content is becoming harder to find. There are two answers to this problem. Technology has now developed and improved the processing of taconite low-grade ores economically on a large scale. Furthermore, vast iron ore reserves have been found in Canada and South America. In the recent trip to South America we found entire hills one thousand feet high, solid

iron ore. So there appears to be no shortage of iron ore available to the free world to keep production high.

Let's examine the difference between the use of natural resources and the possession of them within a nation's border.

(CHART 18)

To do this, we come back to look at three very basic resources--iron ore, coal, and petroleum.

As you will note on this chart, which shows the ten nations of the world with the largest reserves, the United States and the Soviet Union are in the top seven. But notice the names of some of the others.

Certainly just the possession of resources does not give a nation power by itself. On the one hand, India is rich in iron and Kuwait is rich in petroleum, but these are not major powers. On the other hand, Britain, Germany, and France lack oil; Japan lacks iron and oil; and Italy lacks all three. And yet these nations are comparatively great powers without these vital raw materials.

Perhaps what we are trying to say is this: The natural resources that a nation has at its command will determine its power position. This is worth repeating. The natural resources that a nation has at its command will determine its power position.

Mineral resources are not a source of power unless they are developed. If the nation that has minerals cannot extract them and process them, it must trade with nations who can.

History teaches us that nations who do not have raw materials can

obtain them in one of three ways: by colonial expansion or conquest, by developing them, or by buying them.

(CHART 19)

Now, in summary:

In this unit of study we are concerned primarily with resources, both human and natural. I've discussed very broadly some of these resources.

I think we can state as a principle that modern nations need large quantities of resources, both human and natural, if they are to exercise power--power for industry, for trade, for war. Power is related to the strength, to the skill, and to the wealth of a nation.

Another way to put it is this: A strong nation can take the resources it needs. A skilled nation can develop the resources of itself and of others. A rich nation can buy the resources it needs from others.

A strong nation without resources will obtain them by one method or another. A weak nation with resources can lose both its resources and its freedom.

I hope you will enjoy the lectures and seminars and OP's scheduled for this unit. You will have a fine opportunity to study the world's resources, both human and natural, and evaluate their importance as elements of national strength.

After the break we will continue with a discussion of Unit III.

Thank you.

(After the break.)

I might invite your attention to the fact that at 1:30 you will have

a section orientation this afternoon; and then again tomorrow morning, in the first period, 8:45, you will have the area orientation.

As to the section, I think it might be appropriate to mention at this time, and then answer your questions, that as a section you will meet tomorrow morning. Then again you will meet during the course of the study again for a petroleum seminar the following week, a week later; then a labor seminar. And then you will meet five additional times for the area reports at the end of the Resources Unit. That's a total, then, of eight meetings as a section.

You will meet Tuesday morning at 8:45 with the area people in what we call an area orientation. Then you will meet two more times as an area. So you will meet three times as an area group. The two meetings that you will have, the two seminars that you will have, in your area, of course, on that subject, are the free world on/one hand and the Communist world the other.

With that little introduction, are there any questions?

Good luck. Thank you very much.

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