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RESEARCH REPORT

PEOPLE'S REPUBLIC OF CHINA
CENTERS OF GRAVITY

LT COL LARRY DANIEL

1989

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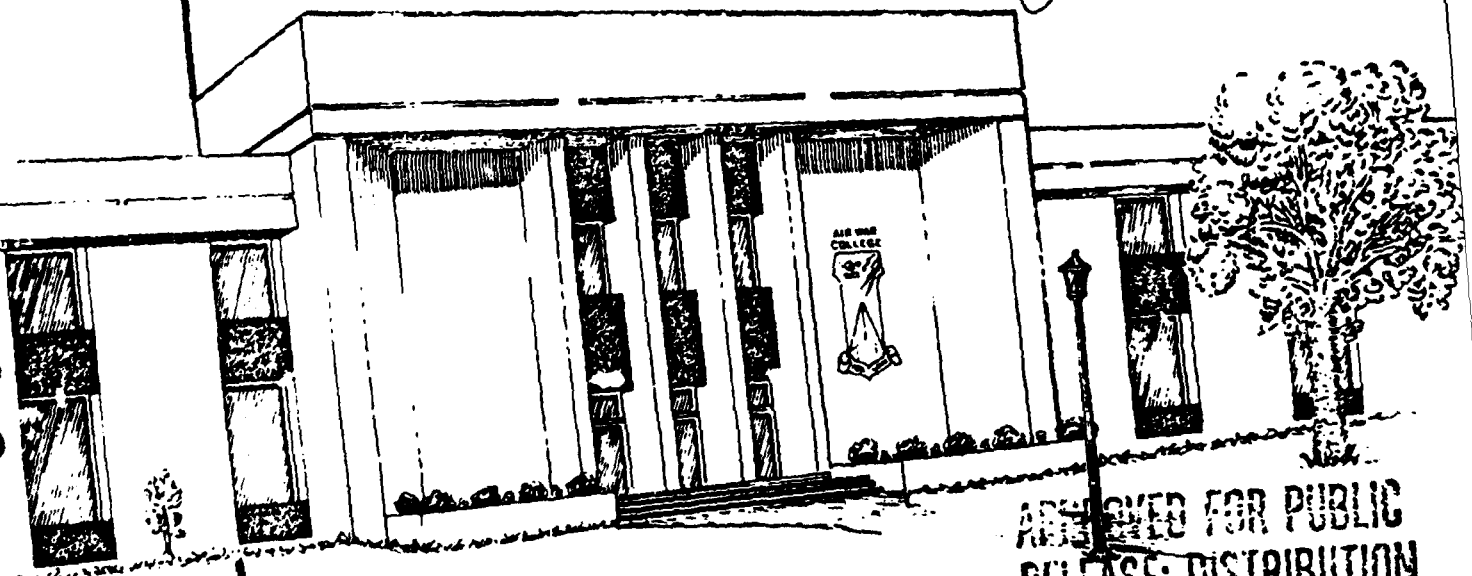
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PEOPLE'S REPUBLIC OF CHINA
CENTERS OF GRAVITY

by

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A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE CURRICULUM
REQUIREMENT

Advisor: Colonel Mike Heenan

MAXWELL AIR FORCE BASE, ALABAMA

May 1989

DISCLAIMER

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EXECUTIVE SUMMARY

TITLE: People's Republic of China Centers of Gravity.

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The United States is well into the second decade of a revitalized relationship with the People's Republic of China (PRC). During this time, an unusual opportunity has existed to collect data and make direct observations to support a strategic analysis of the PRC's centers of gravity. This study begins by discussing the significance of centers of gravity to the contemporary nature of international cooperation and conflict. The study then presents the results of an analysis to determine potential national vulnerabilities of the PRC in five major nonmilitary areas.



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BIOGRAPHICAL SKETCH

Lieutenant Colonel Larry D. Daniel (M. S. E. E. , Air Force Institute of Technology) was directly involved in the formulation of United States policy related to the transfer of advanced technology to the People's Republic of China. As a member of the 1983 US delegation to the Chinese Ministry of Electronics Industry, he traveled throughout mainland China. He served as the Soviet/Warsaw Pact command and control analyst, as well as, the technology transfer monitor for the Assistant Chief of Staff Intelligence, Headquarters USAF. Lieutenant Colonel Daniel is a former faculty member of the Air Command and Staff College and a graduate of all Air Force professional military education schools, including the Air War College Class of 1989.

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CHAPTER I

INTRODUCTION

"Probe him and learn where his strength is abundant and where deficient." (17:100)

These ancient words from the Chinese General Sun Tzu are still very appropriate today. Therefore, we must take every opportunity to evaluate the peculiar circumstances of other countries during times of peace to be fully prepared in times of adversity. More importantly, a meaningful effort to more fully understand any potential adversary may reduce the likelihood of future conflict.

This study presents an analysis aimed at determining some potentially exploitable weaknesses of the People's Republic of China (PRC). The approach used does not follow traditional military capability assessment methods but rather took advantage of the recent rapprochement with China to probe the country and identify fundamental national characteristics which might affect the Chinese power base.

The study begins by introducing the notion that the Clausewitzian concept of "Center of Gravity" includes more than factors solely associated with military strength. A more general interpretation of this concept is now especially relevant as we see more and more examples of nations exerting international influence via means other than the application of military force. The next section presents a very brief overview of some pertinent national features of China to help the reader appreciate China's unusual situation.

Next, the main points of the study's analysis are presented as centers of gravity in each of five major national areas. Each area includes specific aspects of Chinese society that may potentially result in a weakness exploitable by various forms of military, economic, and political pressures. Finally, conclusions are drawn to focus the reader's appreciation for the potential impact of the identified centers of gravity on the national power base of the PRC.

CHAPTER II

CENTER OF GRAVITY

Before this study's analysis could begin, the term "center of gravity" needed to be defined in a manner general enough to allow for the inclusion of nontraditional factors. Ask a United States Army Officer what is a center of gravity and he most likely will define it as the point of an enemy's maximum strength or where he has massed his defense. This definition is neither incorrect nor surprising due to the perspective given this concept by most military professionals. Nevertheless, this definition encompasses too narrow a view for the kind of analysis of China the study intended to accomplish.

Army Field Manual 100-5 (Operations) provides a very readable and complete overview of what constitutes a center of gravity for all levels of war (12:179-180). However, most interpretations of this manual's presentation of the center of gravity concept are, for this analysis, far too simple in application and usually limited to tactical situations. This generally narrow view is quite understandable since the most direct application of Clausewitz's analogy of war to physical laws is at the battlefield level.

Indeed, the traditional military interpretation of the center of gravity concept draws most directly from the explanation given by Von Clausewitz in terms of the "battle's center of gravity" and how "defense is the stronger form of war." (6:391) It is, therefore,

consistent that this treatment of the notion of center of gravity would parallel the battle level view given by Clausewitz (19:4-5).

However, despite the usefulness of the tactical view of the center of gravity concept, a broader interpretation of this concept was needed to allow nonmilitary factors such as societal vulnerabilities and exploitable national characteristics to be investigated.

In fact, Clausewitz appreciated the impact of nonmilitary factors to combat success. He included as important to victory a "range of resources" such as "moral factors and support of the populace" in his scope of war. (6:372-373) Even the actions and theories of Mao Tse-Tung relied on the "remarkable trinity" of Clausewitz (people, government and military). This national view is far more general than the tactical battle factors that receive the attention of most contemporary military investigations. (36:64)

Therefore, the following analysis was structured around an expanded concept of the center of gravity to include factors in addition to those associated with combat. The following structure was used to guide the analysis of potential Chinese national vulnerabilities.

MILITARY	NONMILITARY
Tactical	Cultural
Strategic	Agricultural
Global	Social
	Psychological
	Industrial

Notice this concept of center of gravity has been broken down into five areas: cultural, agricultural, social, psychological, and industrial. These areas form the topic set used to present the results of the study. Much activity in the real world suggests that the medium for conflict today includes the use of economic, diplomatic, and terrorist battlefields in addition to traditional confrontations between armies. Thus, one may reasonably argue that the importance of a nation's nontraditional sources of power and weakness may in fact be as important to the national strength as military capability.

The analysis presented here included both direct personal observations made of Chinese society, as well as, the results of a lengthy literature review to identify significant examples of Chinese centers of gravity (as defined here). The results of this analysis can be found in Chapter IV.

CHAPTER III

PRC BACKGROUND

In order to acquaint the reader with some of the peculiar features of the People's Republic of China, this chapter presents some background notes on the world's most populous nation. Also, this chapter includes observations made by this study's author while touring China in 1983 as part of the US delegation to visit facilities of the Chinese Ministry of Electronics. The delegation was part of a visit agenda of Secretary of Commerce Baldrige, and tasked to establish ground rules for high technology trade relations with the PRC. The first feature of China we'll look at is geography.

Geography

The People's Republic of China is a vast country slightly larger than the United States with over 3.7 million square miles of territory. In addition to size, the PRC shares many other geographical features with the United States:

- A generous amount of coastline;
- Approximately the same temperate climate
(both have cold and semi-tropical regions);
- Great mountain ranges;
- Expanses of uninhabited desserts; and
- Long commerce-supporting rivers.

Despite its size and generally favorable climate, only one-tenth of mainland China is suitable for food

production. (35:4-5, 26:663, 8:127-128) During the US delegation's travels through China, the members frequently commented on the meticulous farming techniques that resulted in precise farm layouts and highly economical land use. Therefore, although China has a somewhat small percentage of arable land, the Chinese farmer is able to produce at excellent output levels due to manpower intense farming methods. Also noticeable in the geography of China is the impact of the work of countless human hands upon the landscape. Giant lakes exist that were dug by hand and large mountains that were removed stone by stone now are nothing more than large gaps in the rolling vistas of the Chinese countryside. (35:210-211, 393)

Population

China's current population of close to 1.1 billion make it the world's most populous nation. One out of every five humans in the world is Chinese. Even with stringent population controls in place, almost 35,000 Chinese are born every day! However, if China can achieve its target of zero growth rate by the year 2000, then India will surpass China in total population by the first quarter of the next century. The Han Chinese are by far the major ethnic group in China. Numerous ethnic minority groups make up less than ten percent of the population. (8:127, 20:23, 35:3)

Government

The formal administrative government of the PRC is subordinate to the Communist party. The functions of the

government are to insure that party desires are carried out. Within the Chinese government there are equivalents to the US Executive Branch (State Council) and Legislative Branch (National People's Congress). Since most legal disputes are resolved at the "peoples" level, there is no formal judicial system as in the US. (8:132-133) After the October 1949 revolution, the People's Republic emerged with the immediate goal of reorienting the ideology of the people in an effort to eliminate centuries of "foreign pollution." This was (and to some still is) one of the main tasks of the Communist party. (27:24-26) The Communist party in China numbers over 35 million members which makes it the world's largest. However, since the total population of China is over one billion, then the PRC has, perhaps, the smallest per capita party membership of all major communist nations. (35:124) This last point became very clear to US members touring China. It was evident to all that most Chinese "tolerate" the government and lack total commitment to communist ideals. This view is especially noted with the lost generation of Chinese (now aged 30-50) who were victims of the 1960's Cultural Revolution, an effort to forge communist ideology on the masses forever.

Economy

The economy of the PRC, while underdeveloped and based largely upon massive levels of human labor, is not without promise. China has developed a significant basic industrial capability (steel, textiles, and machinery) and has reserves of some critical natural resources (oil,

strategic minerals, and iron). Domestic energy production and internal transportation systems are areas of the economy needing the most development. Nevertheless, China's economy is at a level to give credibility to their claim as leader of the Third World. The GNP of the PRC is approximately equal to the defense budget of the United States. Although low, the per capita income has been steadily on the increase. (26:663) Official interaction with leaders of China's electronics industry left US delegates totally impressed with their knowledge and drive. The Chinese, while plagued with limited economic resources, have made impressive economic progress since opening up to the West. For example, China, with little support from the West or friends in the communist world, was able to develop atomic weapons, ballistic missiles, and place an earth satellite into geostationary orbit. (8:132, 149)

CHAPTER IV

PRC CENTERS OF GRAVITY

The following centers of gravity were identified during the analysis phase of my study. As previously described, the general categories of the PRC's centers of gravity fall into five areas: cultural, psychological, social, agricultural, and industrial. The centers of gravity for each area are presented below.

CULTURAL

Center of Gravity #1 - The complex written language of China makes modern communications techniques difficult to use and employ.

It is probably difficult for true warriors to imagine how the character of a country's written language could possibly be considered a center of gravity available for military exploitation. However, Chinese text is, in fact, a real inhibition to China's national development and a serious obstacle to its warfighting capability.

The Chinese written language is one of the world's oldest textual forms (3,000 to 5,000 years). (37:7) The basis for this language is an extremely large set of different and often complex pictures (ideographs or ideograms) rather than a phonetic alphabet, as used in Western languages, to synthesize the spoken word. In fact, old literary Chinese cannot be read aloud since the story in pictures can only be compiled in the mind of the reader. (37:7)

Although modern written Chinese (Mandarin or Kuo Yu) is not as abstract as in the past, it still must rely upon a correspondence between each syllable of spoken communication and a unique ideograph. To make matters even more complex, the meaning of each pronounced syllable is further dependent upon tone and context used. Therefore, many pictures are often needed to represent each spoken sound and a written word constructed phonetically could have many meanings.

(37:8, 4:43)

In all, the Chinese have an unmanageable total of over 50,000 hieroglyphic figures in their written language. Although the average Chinese citizen may be considered "literate" if he can master five to six thousand characters, the number required for satisfactory modern communication (such as for military operations) is about 15,000 figures.

(31:x-xi)

The Chinese have for many years attacked the problem of their difficult and cumbersome language form. Chairman Mao saw the need to restructure the Chinese language early, and within days of the Communist Revolution in 1949 an Association of Language Reform was instituted. (21:43)

The Chinese efforts at language reform have included simplification of the ideogram structure, creation of a purely phonetic alphabet (pinyin), and, more recently, vigorous attempts to employ the power of the computer to facilitate language use. (21:41, 7:36) During the US delegation's tour of R&D facilities within the PRC, it was noted that every computer research organization, both industrial and

academic, visited was engaged in some form of Chinese language automation. The many methods observed included all technology levels from giant keyboards with hundreds of figure elements to sophisticated pattern recognition schemes. While none of the efforts viewed appeared immediately practical, the magnitude and scope of the Chinese commitment to solving their language difficulties underscores the importance they place on their language problem.

Three areas can be easily identified where the written language of the People's Republic of China may degrade their national power base and ultimately their military capability. The areas are 1. Encumbered communications and reduced computer application flexibility, 2. Distorted labor force gender mix, and 3. Decreased ability to index and catalogue information for storage and retrieval.

First, a language that requires thousands of characters or figures to convey intelligence is not compatible with modern electronic, record copy, communication systems that require keyboards or similar systems for data entry. It is impossible for the Chinese to employ even simple telecommunication systems such as the teletype without an alphabet for a practical sized keyboard. Therefore, the Chinese must rely on communications compromises such as over reliance on voice communication and the use of facsimile systems for hard copy transmissions. Such communication means are slow, error prone, and

vulnerable to natural and man-induced interference. For example, consider the simple word "theirs" -

The Chinese characterization is:

他们 (37:17)

Given a fixed bandwidth for transmission, the time to transmit a facsimile of the Chinese characters is 1,000 to 1,000,000 times longer than for the digital equivalent in English. (38:209-230)

For many of the same reasons, the Chinese written language is a huge obstacle to expanding computer use in the PRC. Without a practical technique for data entry, the Chinese have been forced to use English for computer applications. The use of English will impede the expansion of computer useage in China.

Next, the complexity of the Chinese language has had an impact on the structure of the workforce in China. Historically, clerical jobs within China have been filled by the better educated males. (The extensive time required to learn the Chinese written language was not, in the past, considered practical to devote to women.) Today the Chinese labor force continues to be distorted and behind the West regarding the utilization of women. Without full and universal participation of females in the Chinese workforce, the shrinking youth pool (due to population controls) may result in severe labor shortages. The written language of China can be considered partly to blame for this situation. (4:43)

Finally, lacking a phonetic alphabet makes verbal indexing (alphabetization) very complicated, if not impossible. The Chinese dictionary, for example, is divided into 214 sections each representing a class of pictures called "radicals." (37:10) Information in the Chinese written form is therefore difficult to store and retrieve logically.

The Chinese written language should therefore be considered a cultural center of gravity capable of, not only limiting the power of the PRC, but also providing a potentially exploitable national weakness.

AGRICULTURAL

Center of Gravity #2 - Inadequate levels of processed food, limited food distribution and storage facilities, and increased agricultural fragility due to enhanced food production.

Food - the fuel for the human machine is without doubt a major factor in a nation's ability to exert power. Conversely, insufficient or marginal food production and distribution capability can be an exploitable weakness to a country's warfighting ability.

During the last decade, China has made significant, even remarkable, progress in its ability to feed its population. By introducing some rather capitalistic methods into their commune farming system, the Chinese are now able to supply adequate food levels to over twenty percent of the world's population with only seven percent of the earth's arable land. (14:55)

The basis for China's progress in food production is a system termed "baogan." Under this approach, producing households can keep or sell all agricultural products remaining after state quotas are met. (32:118)

However, despite the successes in food production, China remains potentially vulnerable in providing foodstuffs to its population. The vulnerabilities are 1. Low processed food levels, 2. Shortages of food distribution and storage facilities, and 3. Overstressed food generation efforts.

Processed food is edible matter that has been transformed from "a raw state" to another form for the purpose of preservation or convenience. Although China has made great advances in total food production, still over 90 percent of all Chinese foods are not processed but sold in the form produced. (This level compares to less than 20% of Western foods that are sold as "raw.") (33:273)

An insufficient food processing capability forces the Chinese to produce disproportionately large levels of foods that are either simple to process or can be distributed or stored raw. This food production limitation severely restricts the variety of food available within China. Also, large unprocessed food production levels stresses the seasonal nature of nutrients available to the Chinese. (32:121-122) Perhaps, more importantly, restricted food processing capability places extra demands upon food distribution networks because foodstuffs must reach the consumer quickly. High levels of processed food

also reduces the need for bulk storage capacity since processed food can be stored at all locations along the distribution line. Therefore, inadequate processed food levels may make the PRC overly vulnerable to drought and other agricultural perils. (32:124)

As a major food system vulnerability, the lack of adequate food processing within China not only affects the quality of food consumed, but also places increased demands on another Chinese food vulnerability - food distribution and storage capability. (3:215-218)

Food storage facilities and food distribution networks in China have always been marginal at best. Now with continued Chinese population growth and the parallel increases in food production, these two necessary components of a modern agricultural system are most notably inadequate. The Chinese food distribution system is dependent upon a limited rail network that basically supports only the large urban centers. The remaining areas of China rely upon the farmers "carting" foodstuffs to market. Both of the above distribution methods become severely strained in winter and extremely vulnerable to all forms of emergency conditions. (32:121) Without sufficient in-country food distribution, the PRC has been pressed to emphasize "province self-sufficiency" at the expense of a much needed national agricultural perspective (33:251)

Lacking an adequate food distribution network also further increases demands upon the equally poor Chinese food storage system. There are many reports of large quantities

of grain rotting due to an insufficient number of granaries caused by the lack of steel and cement for construction.

(33:251, 32:123) In addition, during their visit, the US delegation frequently noted small to large refrigeration systems not operating due to lack of electricity to run them.

China's lack of adequate levels of processed food, insufficient storage and food distribution have been overcome by extraordinary increases in food output levels. However, the extremely large growth in food production due to increased privatization has resulted in new problems that may add to China's national vulnerability.

First, several members of the US delegation were told by the Chinese that the new position and wealth of the peasant farmer due to "baogan" has produced a level of envy from those in the industrial sector. This envy has resulted in a movement of young people away from high tech industry to the more prosperous countryside. Even the all-volunteer People's Liberation Army (PLA) has recently found it difficult to meet recruiting goals due to the new attractiveness of the farm.

Next, the vigor by the individual Chinese farmer to enhance production of agricultural products has placed strong and uneven demands on supplies of irrigation water and synthetic fertilizers. Lacking the ability to orchestrate a national-level food production plan, Chinese efforts have resulted in farm supply shortages and widespread drinking water pollution. (32:124)

In total, the measures taken by the Chinese to feed themselves have been largely successful. However, the resultant food production system is now overly fragile and subject to massive and catastrophic interruption. The potential dangers of an overstrained and inadequately planned agricultural system are noteworthy in their potential to weaken the Chinese national power capability. The chief danger is in a rapid food production decrease that results in civil panic and widespread turmoil of the population.

SOCIAL

Center of Gravity #3 - Social conflict between strict communist ideology and new economic and personal freedoms

Social orientation, direction, and unity can greatly impact the ability of a nation to exert power in the international arena. Unambiguous support by a country's population to its government's policies and demands can result in needed national strength for times of extreme tension, as well as, for various levels of conflict. On the other hand, a society perplexed with frequent "redirection" may not be able to contribute full commitment to its government during periods of adversity.

The People's Republic of China has a population that has not only endured centuries of vacillating foreign influence, but countless conflicting, confusing, and often irrational demands of emperors, warlords and more recently communist bosses. (27:24-26) However, despite a millennia of social evolution, the individual Chinese citizen may be

expected to react to the changes and influence of the society within his sphere of memory. This perspective of an individual's conflict and confusion with his society can be compared to the situation that existed in the US during the Vietnam War. The mixed views and feelings of American citizens led to what William Manchester called a "Divided States of America." (24:1224-1229)

In order to establish that the social conflict of the Chinese people with their present situation is a potentially exploitable national weakness, the following examples from contemporary literature are provided.

Example - The once omnipresent "Little Red Book" of Chairman Mao has given way to the current Beijing best seller - "Lee Iacocca." (29:30)

Example - The Chinese People's Liberation Army, once viewed as guardians of the ideology of the revolution, have now taken on the unusual task of running military factories to produce consumer goods for sale at a profit. Chinese aircraft plants are now producing trash compactors and rowing machines while ammunition factories and uniform mills turn out refrigerators and T-shirts. (5:44)

Example - The fervent goal of all Mao's efforts, "the class struggle," has been usurped by a national enthusiasm aimed toward modernization. In the ten years since economic reform, the Chinese have tripled industrial output, doubled

foreign trade, and more importantly converted the masses into consumer zealots. (1:10B, 30:24)

Example - In China's communist society, one of the most stable elements for the individual was the promise of "absolute job security." Despite the disregard for personal desires concerning choice of work, the expectation of full employment through life is considered a right guaranteed by the government. For the first time, since the 1949 revolution, work guarantees are not being extended to new job applicants and graduating students. Therefore, the young Chinese worker will experience the previously unknown challenges of both finding a job and keeping it. (9:53)

Also, inflation unknown to China's stagnant economy is now another facet associated with the new reform. (10:42)

Example - The new prosperity in China has occurred apart from strict adherence to the communist ideology. (40:60) Even the Red Guards, who previously attacked anything related to capitalism, now attend western-oriented business schools. (22:42) This ideological conflict has fractured and divided the previously solid Chinese leadership. "Hardliners" and "reformists" groups are all watching the pace and direction of change to position themselves as heroes rather than scapegoats. (22:41-42)

Example - The reintroduction of intellectuals into Chinese society will confront years of hardline communist-instilled disdain for those who contribute to society with their minds and not with their hands. The soon to be recognized importance of the intellectual to China's national growth will serve to undermine yet another facet of the communist ideology. (15:14A)

These examples display an area of Chinese national vulnerability that comes from the rapidly changing direction and purpose for China's individuals. This vulnerability may stem from a possible lack of total commitment to the communist ideology and the associated individual reluctance to defend those ideals. These items further demonstrate the potential for social conflict to exist in the way the Chinese view their place in society. An unsure place and direction in society by the citizens of China make them potential victims of radical social views and objectives. Perhaps a new ideology will emerge to fix the future of China's actions. However, during the transition period, an exploitable center of gravity based upon lack of sound societal orientation has emerged.

PSYCHOLOGICAL

Center of Gravity #4 - Guilt and shame associated with treatment of the dead, population controls, and form of government.

This particular center of gravity is based upon the potential to exploit the longstanding oriental need to avoid shame or to "save face." That is, the oriental mindset

views improper or ineffective action as failure. This view makes the people of China vulnerable psychologically to external investigations and critiques.

During the US delegation's travels throughout the PRC, the reactions by the people of China to US member's questions and conversations revealed three areas of national "shame."

The vulnerable areas identified as the "Three Shames" are 1. Shame of treatment of the dead, 2. Shame of population controls, and 3. Shame of form of government.

Each of these Chinese emotional sensitivity areas will be discussed briefly.

Treatment of the Dead

Although communist China is an avowed atheistic nation state, the religious heritage of China continues to exist throughout the country. Therefore, the customs and traditions associated with death as the transition to an afterlife remain despite state efforts to remove this belief from the individual Chinese mindset.

An important element strongly associated with the Chinese religious past is the need to render respect to the dead via elaborate funeral rituals that culminate in an earthen interment. However, the state has recognized the impracticality of continuing to bury the dead and has, to the great "shame" of its citizens, strongly advocated universal and unceremonious cremation. The PRC government supports its firm stand on cremation by citing that its six percent death rate in a country of more than one billion

produces over 60 million corpses per year (one quarter the population of the United States). By Chinese official estimates, the graves for each million dead removes 667 hectares (1647.5 square acres) from food production and consumes 300,000 cubic meters of scarce wood for coffins. The government also fears widespread ground water contamination will occur with continued burials. (13:9-10)

Thus, it is easy to understand how the PRC is compelled to strongly discourage burial. However, the growing impact upon Chinese individuals of seeing bodies picked up and disposed of like trash is profound. This particular "shame" is a potentially exploitable national psychological weakness of the PRC. For example, an enemy could redirect Chinese attitudes through death oriented propaganda materials or even solicit local civil support via burial promises. (12:56)

Population Control

Any visitor to China will doubtless make the following two observations concerning the population of the country. First, in a nation with countless masses, there is an uncomfortable absence of young children. Secondly, the social pressure to limit families to one child is evident everywhere. Billboards and all other forms of public information extol the virtue of the single child. Abortion and sterilization are universal and encouraged with vigor. (25:52-53)

The Chinese government defends its strict and controversial population control methods as not only the

urgently needed model for most of the third world, but also the only logical and humane option to China's population predicament. (20:22-23) However, this approach runs counter to the age old Chinese view of the importance of the family. Therefore, population controls aimed at the single child family may undermine other successful efforts of social conversion in China over the last 40 years. One child families will result in a social structure without brothers, sisters, uncles, aunts, etc. Further, psychologists argue that the one child family tends to produce children that are spoiled and self-centered. These two personality traits run counter to the ideals of the universal communist plan. (18:45)

Thus, China's population control policies are not only causing strain upon the present population but may in the future further reduce the country's strength. This strength reduction may be brought about by several means. First, the PRC's one child policy may reduce Chinese parents' eagerness to have their offspring join the military lest the family line be ended. As population control measures take effect, China's demands for an expanding pool of young labor may not be satisfied. In addition, the growing number of retirees will begin to be in trouble with a declining base of young workers for support.

Form of Government

The final psychological center of gravity to be discussed is related to the revolutionary basis of the government of the People's Republic of China. Unlike the

American Revolution that united the colonies against the tyranny from abroad, the Chinese Communist Revolution was the outgrowth and end to a long internal power struggle.

The US delegates noted that, although the Chinese Communists have made great social, industrial, and military advances since their takeover in 1949, there still remains a large portion of the population that feels the government exists because they lost an unfair struggle. Recent riots and demonstrations within China display an unsurpressed desire for a "Western democratic" government. (28:51) Indeed, members of the US delegation frequently received private expressions from individual Chinese of the "shame" they held for their form of government. The Chinese justified their situation by saying, "what choice do we have."

This lack of complete commitment to their communist form of government, not just certain policies, displays an exploitable national weakness.

INDUSTRIAL

Center of Gravity #5 - Mindset to use all waste is incompatible with high technology hardware and an industrial base that lacks a corresponding infrastructure.

The final center of gravity relates to the industrial capability of the People's Republic of China. This analysis identified two areas where the Chinese will be limited in the amount of industrial contribution their society can apply to national efforts to become a major power.

The first restriction to the Chinese industrial base is the long-instilled penchant to save everything for possible future use. The Chinese are compelled to convert any waste into useful material. In Chinese society, there exists a long history of making all material things last in order to maximize the limited output of their production. The concept of "reuse" is, however, often incompatible with the extreme material requirements of modern technology. The following examples will illustrate this restriction to Chinese industrial growth.

Example - The complex high tech process used to produce quality large scale integrated circuits is dependent upon precision photographic support. This phase of the process requires extremely pure water, free of foreign matter. The high level of purity is needed in order to keep the precision photographic etching masters uncontaminated. High tech water purification systems are therefore critical to integrated circuit production and are controlled as a sensitive technology. A great deal of effort was involved to license a complex water purification system for sale to the Chinese. Horribly, the million dollar clean water system was installed by the Chinese with old used lead pipe. The use of dirty old piping would largely negate the contribution of the water purification system. Although the Chinese fully understood the need for ultra pure water for their

microelectronics industry, they, nevertheless, let the old "don't throw anything away" mindset compel them to use the pipe. Additionally, Chinese "clean rooms" are frequently cooled with open windows to save electricity and air conditioner wear and tear. (41:145)

Example - Mr. E. E. Bauer, the Boeing Company technical representative to China, relates an experience of how the Chinese save everything mentality was nearly disastrous. Shortly after President Nixon renewed relations with the PRC, the Chinese purchased several Boeing 707 aircraft for use in their civil aviation industry. A routine maintenance item for this aircraft is replacement of hydraulic filters. These \$30 filters are marked "non-reuseable." After months of unusual hydraulic difficulties with the China 707 fleet, it was discovered the Chinese technicians were cleaning the filters with gasoline and putting them back in service. Failure to replace the filters resulted in the hydraulic difficulties and the eventual failure of other costly system components. (2:31-32) The Chinese modern industrial support base of people and facilities continues to adhere to their traditional penny-pinching approach to installation and maintenance. This approach will undermine China's attempts to successfully

incorporate high technology into their industrial base and further weaken national power.

The next impediment to China's industrial growth is their lack of understanding or appreciation of the need for a rational technical infrastructure to support the integration of high technology into industry. This characteristic has resulted in the Chinese blindly attempting to leap past all the time consuming and cumbersome learning and maturing steps needed to properly assimilate technical advancements.

The US delegation often observed that Chinese factories and institutes were either involved with advanced unproven technology or perfecting the ability to copy Western technology. Neither approach helps to advance or mature the Chinese industrial capability. For example, while Chinese industry has failed to master the ability to produce the plastic cases for desk top computers, China has over 25 facilities (triple US) investigating superfast gallium arsenide computer chips. (41:145) The US delegation frequently noted that Chinese industry abounds with plants that devote all their efforts to copy or reverse engineer western hardware. China's overdependence on its ability to reproduce the technology of others is at the expense of needed efforts to develop innovative indigenous capability.

A negative by-product of the copycat approach to industrial advancement is that some of the best technology to copy is in the field of weapons. Unfortunately, China

sees the arms business as the best method to acquire needed hard currency even at the expense of a broader development of their national technical base. Thus, it is not surprising to see China as the world's fourth largest arms supplier with mostly copied weapons technology. (23:45)

In sum, the Chinese methods to advance their industrial capability are limited by their traditional frugal approach to life and their efforts to become a modern technical society without first acquiring the needed support base. Thus, the Chinese industrial base may not be fully capable of supporting modern technical requirements needed for advanced weapon systems employment.

CHAPTER V

CONCLUSIONS

The centers of gravity identified have various levels of application and utility for many different scenarios. For example, knowing the limitations of the Chinese written language could be useful for many levels of national interaction with the PRC from peaceful negotiations involving technology transfer to military application of counter command and control during combat. Also, knowing the Chinese deficiency in food processing capacity could be an important factor during either an extended conflict at home or a long-term expeditionary military campaign. The areas of psychological "shame" found could become the basis to influence the population of China toward action as the targets of modern psychological warfare. Further, knowing the widespread social conflict that exists between the need for more individual freedom and the strict limits of historical communism provides yet another potentially exploitable weakness of contemporary Chinese civilization. Such exploitation in conflict could be via propaganda and psychological operations to attempt societal reorientation. Finally, the industrial centers of gravity provide various opportunities for any future adversary to overwhelm China's war-making capacity through attrition aimed at a vulnerable industrial base. An industrial base needing time to fully mature to world standards.

The objective, however, throughout the analysis was not simply to uncover the "Achilles heel" of China (military

approach) but also to find Chinese national sensitivities that could further US advantage for all levels of conflict or no conflict (nonmilitary approach).

The concept of traditional society based centers of gravity can be employed with the same vigor we now give to understanding and countering a nation's operational military vulnerabilities. With this approach, the potential for future cooperation and conflict between nations will, depend upon interpreting a broader range of alternative national and military characteristics than just elements of military strength. To be properly prepared to support the United States' interests, the modern military professional must be informed on all aspects of any potential adversary's society. An analysis such as the one presented here, should provide a new awareness of the importance to understand all aspects of a country's strength.

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