THE CHINESE CONCEPT OF COMPREHENSIVE NATIONAL POWER: AN OVERVIEW

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In measuring a country's national power, one must look at it comprehensively and from all sides.

—Deng Xiaoping[1]

China is a sharply rising power in the political hierarchy of the world. Its perception and assessment of its present power status in relation to other nations is of considerable importance since it is closely linked to apprehensions about the actions of a powerful China in the future.

The Chinese are acutely conscious of their rising trajectory and they possess an innate desire to enhance their global status. Contextually, they seem to be able to match their growing military capacity with their economic strategy and successfully link it to the direction of their foreign policy.

Hence, the Chinese rise is being realised not through a gradual laidback process but through a carefully crafted national strategy, political will and human exertion. In such a scenario, evaluating the global hierarchy of nations for tempering the foreign policy and strategy in accordance with the evolving power equations is of prime importance to the Chinese.

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1. As cited in *Renmin Ribao* (People's Daily), February 26, 1990.

In the current scenario, with China on the threshold of great power status, their strategists have been forecasting the future international hierarchy through the measurement and comparison of Comprehensive National Power (CNP) of various nations.

Assessing national power is neither a new concept nor a particularly unique one. It has been prevalent in both Western and Eastern military thought processes since ancient times. However, the strong sense of historical importance has made the Chinese look into their own history while sharing notes with the relatively contemporary Western thought process.

In ancient times in China, the Warring States focussed on how a wise leader made strategy according to the power of his state. The famous Sun Zi warned that the outcome of war—to a large extent—depended on the correct assessment of power through calculations and intelligence estimates of enemy strengths and weaknesses.

In the current scenario, with China on the threshold of great power status, their strategists have been forecasting the future international hierarchy. The means of making such strategic assessments has been through the measurement and comparison of Comprehensive National Power (CNP) of various nations.

The aim of this exploratory article is to attempt understanding the important Chinese concept of CNP as a measurement of geo-political power and provide an overview of its efficacy, uniqueness and methodological structure. Analysis of the CNP of individual countries and their futurist predictions and subsequent consequences will be avoided to prevent a diffused enlargement of the article.

BACKGROUNDER

During the Cold War period, a nation's power was largely determined by the strength and capability of its military forces. Accordingly, the Soviets developed the concept of Co-Relation of Forces (COF) as a means of carrying out such measurement (the concept will be compared and discussed later

in the article). The accent of this concept was overwhelmingly military in accordance with the thought process then in existence. However, with the dismantling of the power blocks and a current transition towards a multipolar world, sheer military might no longer remains the defining factor of strength and power. Instead, elements such as economics, technological ability, etc have become increasingly critical in the competition for power and influence in the world.

A closer inspection reveals that the concept of CNP and the associated analytical methods are not rooted in traditional Marxist-Leninist dogma or Western social science but are in many ways unique.

Chinese strategists having taken note of Deng Xiaoping statement, "In measuring a country's national power, one must look at it comprehensively and from all sides"[2], have come to evolve the concept of CNP.

CNP *(zonghe guoli)* refers to the combined overall conditions and strengths of a country in numerous areas. It is the aggregate sense of all factors such as territory, availability of natural resources, military strength, economic clout, social conditions, domestic government, foreign policy and its initiatives, and, finally, the degree of wielding international influence. Thus, CNP is an evaluatory measure, done both qualitatively and quantitatively, of the current and future strengths of all these above factors. While the former is resorted to for general discussions of a country's strengths and weaknesses, the latter is used to calculate numerical values of CNP through the use of formulae and their own extensive index systems and equations. It is noteworthy that the Chinese seem to reject the usage of GNP (Gross National Product) as a means to evaluate national power, as is prevalent in the US. A closer inspection reveals that the concept of CNP and the associated analytical methods are not rooted in traditional Marxist-Leninist dogma or Western social science but are in many ways unique.

Contextually, the ongoing "debate" about CNP is also important for the RMA (Revolution in Military Affairs) researchers, because, according to

2. As cited in Ibid.

The notable aspect of both studies is that they have avoided mentioning China as a future "superpower" (unlike the Chinese media), preferring to label China as one of the future five equal "poles".

Chinese analysts, foreknowledge of a nation's CNP can determine which side will win a war by better implementation of RMA[3]. Thus, future CNP scores can help not only in identification of the status hierarchy and the power potential of a state but also which state is likely to implement RMA to a higher degree and, hence, be the eventual winner in an overt war.

Unfortunately, numerous Chinese authors have made predictions about future CNP, but few provide detailed accounts about the associated methodologies for measurement and evaluation.

Some of the fairly detailed accounts of calculating CNP have appeared in two books by two different institutes. While one has been published by the Academy of Military Science (AMS), it is contrasted by the other book published later by the civilian Chinese Academy of Social Sciences (CASS). It is noteworthy that both these have approached the problem within the stated ambit outlined by Deng Xiaoping and some of the authors were apparently directly involved with Deng's estimates. While the AMS study propounds a more orthodox view (the published work of Senior Colonel Huang Shuofeng) the reformist view was presented by a team of researchers from CASS who had Gao Heng, a noted author, as their senior adviser. Seemingly, Gao helped to invent the key Chinese concept of structural multipolarity, which he published in 1986. This coincided with Deng Xiaoping's national security adviser announcing the concept[4].

Interestingly, both the studies are based on the hypothesis that the US is a declining power with the gap between its power and those of other growing

3. According to Li Qingshan, "Through the analysis of belligerent countries' Comprehensive National Power, even before a war has begun, people frequently can know the results in advance." Li Qingshan, *Xin junshi geming yu gao jishu zhanzheng* (The new revolution in military affairs and high-technology warfare)(Beijing: Junshi kexue chubanshe, 1995), pp.191-192.

4. See Gao Heng, Shijie *zhanlue geju zhengxiang duojihua fazhan* (The strategic world structure is developing toward multipolarity), *Guofang daxue xuebao* (National Defense University Journal), no. 2 (1986), pp.32-33.

power centres (or poles) rapidly reducing and, hence, the world is slowly moving towards multipolarity. The other notable aspect of both studies is that they have avoided mentioning China as a future "superpower" (unlike the Chinese media), preferring to label China as one of the future five equal "poles".

The main point of divergence between the two studies arises from estimating the rate of growth of China in contrast to the decline of the US. They also differ on how to assess the military power of a state. There is also a contrast in the debate carried on in the two studies about the future strategic environment by the civilian and military mindsets in China. It is apparent that CASS and AMS have used different rates of growth and decline. **AMS growth estimates have projected China's CNP increasing seven times faster than the CASS pace;** the CASS rate for Japan is also much slower. The CASS assessment has the US CNP decreasing 1 percent a year. [5] The US is likely to be overtaken by Japan whose CNP is growing by 1 percent.

An analysis of the two works reveals that the AMS study projections suggest that by 2020, both the US and China will have (roughly) equal national power. Thus, in a way supporting the views propounded by Deng Xiaoping and Li Peng which assert that the world is moving towards multipolarity. This is in sharp contrast to the CASS study and, hence, the reformist view of thought. CNP scores for the present suggest that it continues be a unipolar world, with America being the superpower. Projected CASS scores show that by 2020, Japan will be number one, followed closely by the United States. Most surprisingly, it projects China to be only number eight in the world, and not one of the major powers in the world. It predicts that China and Russia will be "half poles" because they will each have only about half the national power of Japan and America.

ORIGINS

The concept of "Comprehensive National Power" has ancient cultural roots and has "evolved from the concepts of 'power,' 'actual strength', and

5. "Geo-Political Power Calculations", available at http://www.fas.org/nuke/guide/china/doctrine/pills2/part08.htm

"China's wise ancient strategists," Wu writes, "never advocated relying only on military power to conquer the enemy, but emphasized combining military power with the non-military power related to war in order to get the upper hand."

'national power.'" [6] The studies of Herbert Goldhamer provide examples of ancient Chinese strategists who emphasised the need to conduct calculations about the future[7].

In his book *Grand Strategy*, Wu Chunqiu, from AMS, gives examples from Sun Zi's *The Art of War*, Wu Zi's *The Art of War*, and Guan Zhong's *Guan Zi*, to show how "to a certain extent, the discussion of warfare in Chinese ancient literature embodies primitive, simple, and unsophisticated national power thought."[8] "China's wise ancient strategists," Wu writes, "never advocated relying only on military power to conquer the enemy, but emphasized combining military power with the non-military power related to war in order to get the upper hand." Sun Zi advanced that there were "five things" and "seven stratagems" that governed the outcome of war. He felt that the results of war could be forecast in advance by weighing components, which included politics, military affairs, economics, geography, and "subjective guidance".[9]

One of the largest and most famous geo-political coalitions in ancient Chinese history was based on power calculations similar to the assessments of CNP. In 334 BC, during the Warring States era, the strategist Su Qin proposed that the six states of the vertical pillar of the strategic rectangle that made up the Warring States, unite against the hegemonic state of Qin. Su Qin successfully persuaded all six to "unite vertically" (*he zong*) based on quantitative calculations of comparative power and prevented their destruction, one by

6. Wang Songfen, ed., *Shijie zhuyao guojia zonghe guoli bijiao yanjiu* (Comparative studies of the comprehensive national power of the world's major nations)(Changsha: Hunan chubanshe, 1996), p.23
7. See Herbert Goldhamer, *The Adviser* (New York: Elsevier, 1978); and Herbert Goldhamer, *Reality and Belief in Military Affairs: A First Draft* (Santa Monica, CA: RAND Corporation, 1979).
8. Wu Chunqiu, *Guangyi da zhanlue* (Grand strategy)(Beijing: Shishi chubanshe, 1995), p.98.
9. Ibid.

one, from Qin's hegemonic designs. This coalition stood the stand of time for nearly a century.[10]

The importance of economic issues was growing. Hence, in such a scenario, military force could no longer be the sole judge and primary index to a country's strength.

ORIGINS OF THE MODERN CONCEPT

The phrase and the modern concept of "Comprehensive National Power" came into being during the early 1980s when the idea of measuring and comparing national strengths developed. The driver for this development mainly took place as Deng Xiaoping modified Chairman Mao's Party line that "world war was unavoidable," to predicting that "world war probably can be avoided."[10] The Marxist-Leninist "foundation" of Deng's new assessment of the security environment was that "the growth of the world's forces of peace exceeds the growth of the forces of war." The Cold War period signified that the United States and the Soviet Union were at a stalemate in their military struggle, but the strength of countries that were opposed to war was also increasing. The international environment was evolving and the importance of economic issues was growing. Hence, in such a scenario, military force could no longer be the sole judge and primary index to a country's strength which would be determined by numerous other factors as well. Thus, there needed to be means for measuring the sum of the "forces restricting war".

Deng wrote:

> If at the end of the new century, China attains a "comparatively well off level," then there will be a major increase in the power restricting war. If China again goes through thirty to fifty years of construction, and comes close to the level of developed countries, then at that time, it will be even harder for a war to be fought.[11]

10. Zhu Liangyin and Meng Renzhong, *Deng Xiaoping zonghe guoli sixiang yanjiu* (A study on Deng Xiaoping's Comprehensive National Power thought), in Li Lin and Zhao Qinxuan, eds., *Xin shiqi junshi jingji lilun yanjiu* (Studies of new period military economic theory), (Beijing: Junshi kexue chubanshe, 1995), p. 42.
11. Ibid., p. 44.

"Deng Xiaoping believes that military power is the basic means for ensuring that economic power will rise, protecting the nation's general interests, and carrying out global strategic goals."

Thus, Deng has been attributed the foresight to establish the theoretical foundation and basis of the concept[12]. However, it is unlikely that Deng himself ever used the terms "Comprehensive National Power" which would have probably come around through analysis of his statements on the priorities of China's national construction and the significance of this development to the growth of China's strategic power.

Writing on the issue, Zhu Liangyin and Meng Renzhong of AMS state that Deng believed that economic strength can be a force for peace and can counter military strength. It was probably this aspect which led to economic power being considered the most important and essential factor in Comprehensive National Power calculations. However, this aspect does not undermine the importance of military power as the authors go on to state that "Deng Xiaoping believes that military power is the basic means for ensuring that economic power will rise, protecting the nation's general interests, and carrying out global strategic goals. Therefore, while we, on the one hand, emphasize economic power as being the base of Comprehensive National Power, we must on the other, devote ourselves to the development of military power, the element with the most direct role in Comprehensive National Power."[13]

Similarly, the importance accorded in the CNP calculation to scientific and technological research and development in the military and economic arenas was primarily due to Deng's accent on these aspects— a probable elaboration of the Marxist thought of science being the productive force.

In debating about the origins of the term Comprehensive National Power Senior Colonel Huang Shuofeng of AMS, claims authorship of the specific phrase. Writing in his book *On Comprehensive National Power*, Huang goes on to

12. Ibid., p. 43.
13. Ibid., pp.44-46.

describe that in 1984, he was part of a group of Chinese scholars who undertook a study on China's future and likely defence strategy in 2000. It was this study group that closely analysed the "national power equations" propounded by Ray Cline and the West German professor William Fuchs. However, these models for comparing international power balance were rejected as they were found to be limited and narrow, devoid of a holistic character. Finally, the participating Chinese scholars began to create their own models and formulas for weighing and contrasting different countries' overall power. It is around this time Huang says that he "put forward the concept of 'Comprehensive National Power,' and established a 'Comprehensive National Power dynamic equation' model aimed at comprehensively assessing the comprehensive power of different countries in the world, and conducted comparative analysis of the major countries' Comprehensive National Power."[14]

The importance of the concept of CNP and its associated discourse to the Chinese Communist Party is revealed when conscious efforts are made to justify its creation and existence, while linking its foundation to the Marxist classical thought process. Accordingly, in his book, Huang cites Marx, Engels, and Mao as precedents for "guiding thoughts on studying Comprehensive National Power". He states that Chairman Mao contributed to the development of the concept of CNP through his "strategy of grasping the situation as a whole," which applied Marxist-Leninist theory to China's military strategy. In his writings, Mao not only emphasised the role of concrete material components, such as military and economic power, as factors that would tilt the balance of power, but also included spiritual components like political will , popular will and the influence of leaders. Both Huang and Wu Chunqiu have also praised Mao's 1956 speech, "On the Ten Relationships," which they mention as "a complete guide to strengthening Comprehensive National Power."[15]

Chinese scholars, today use the concept of CNP to make assessments in their particular areas. For the military strategist, CNP scores can aid in warfare, more specifically in future warfare to predict "who is capable of winning

14. Huang Shuofeng, *Zonghe guoli lun* (On Comprehensive National Power)(Beijing, 1992), p. 94.
15. Wu Chunqiu, n.8, p. 99.

"Because different countries' national conditions are not the same and researchers' personal goals are different, interpretations of the concept of national power vary."

a victory in a new RMA war."[16] And, for others, it can assist in a number of way, including providing pointers towards "all directional economic war"[17]. However, the concept comprises various qualitative and quantitative components.

QUALITATIVE FACTORS

While the overall concept of CNP is fairly distilled, it is noteworthy that the specific components of CNP are nuanced and at times dissimilar in their composition – depending on the interpretation of the particular analyst. Some Chinese authors prefer to adopt a qualitative approach towards CNP by dividing the entire ambit into broad areas, while others prefer a quantitative analysis, with detailed definitions of each component. Undoubtedly, some factors remain common between the two efforts but inconsistencies exist. This dilemma has been commented upon by the Chinese who feel that "because different countries' national conditions are not the same and researchers' personal goals are different, interpretations of the concept of national power vary."[18]

An overview of the qualitative approaches would make it easier to understand the quantitative methodologies later.

Economic Aspects

While military strategists have a tendency to view the entire concept of CNP from the prism of war and its associated consequences, civilian thinkers relate to the concept in a more nuanced fashion. Writers Tong Fuquan and Liu Yichang have tried to analyse the concept by accentuating the economic issues of nations. They have accordingly divided CNP into four major parts—with economics playing the prominent and crucial role which is followed by politics,

16. Li Qingshan, n. 3, p. 191.
17. Tong Fuquan and Liu Yichang, *Shijie quanfangwei jingji zhan* (The world's all directional economic war)(Beijing: Junshi kexue chubanshe, 1991).
18. Wu Chunqiu, n. 8, p.95.

science and technology, and military affairs. Thus, they feel, "Actual economic strength is, of course, the major component part of Comprehensive National Power" [19]. The other three areas are not discussed as independent factors but with regard to their relationship with the overall / specific economic scenarios. The authors firmly believe that a country with strong economic power will correspondingly wield powerful political influence. However, they do admit that Japan is an exception to this rule in which case, economic influence and clout has not translated into an equally potent strength international political affairs.

A direct linkage exists between the extent of a country's economic power and the level of its scientific and technological prowess.

Similarly, a direct linkage exists between the extent of a country's economic power and the level of its scientific and technological prowess. The authors opine that even military power— which is seen as the primary factor for other analysts— is to be viewed within the ambit of its relation to other factors mentioned above.

Another important aspect that needs attention is the correlation between military budgets and military power. In most cases, military expenditure is both a reflection of a nation's military strength, while providing an important indicator to the power of its economy and, most importantly, its ability to imbibe and disseminate military related technological aspects.[20] However, a country lacking in military power is unlikely to score high on CNP.

Strategy

The Chinese have an acute sense of history and the military thinkers such as Sun Zi gave importance to attacking the strategy of the enemy – an aspect that has found reflection in modern times by writers such as Xi Runchang of AMS. Xi explains that his particular stress on the importance of strategy does not ignore the position of the other components but is "done in order

19. Tong Fuquan and Liu Yichang, n.17, p.232.
20. It can argued that some Gulf countries, especially Saudi Arabia, have impressive military budgets but that is no reflection on their scientific capability or international clout.

Xi Runchang has accordingly proceeded to evaluate national strategies based on various aspects, the main being how a country's leadership "effectively utilizes" its strategy.

to give prominence to this important area that people often overlook."[21] Xi, has accordingly proceeded to evaluate national strategies based on various aspects, the main being how a country's leadership "effectively utilizes" its strategy. Xi writes, "In the current information age, for any major nation in the strategic competition, whether they take action early or take action late, is extremely important…."[22]

Taking the basket case of China and Russia, Xi feels that since both these countries were late entrants in the field of strategic competition and, hence, were overtaken by "ambitious" countries like America, Europe and Japan that moved quickly to implement their strategies.

Xi's compatriot from AMS, Wu Chunqiu, however, supports a slightly different point of view in which he suggests that CNP and grand strategy have an "unbreakable internal connection" of a "dual nature."[23] In a vicious circle of sorts, he feels that CNP is wielded to attain the goals of grand strategy (for which a strong CNP is required), yet, on the other hand, its development becomes one of the aims of grand strategy. Thus, in Wu's opinion, strategy cannot be a component of CNP evaluation.

Wu feels, "In the current age when peace and development have become the main trends in the world, numerous countries, to different degrees, recognize that economics are the foundation; science and technology, especially high technology, are the guide; education is the guide of the guide; national defense is the back-up force; and national policies are the key factor playing a unifying and coordinating role." Furthermore, citing the break-up of the Soviet Union, as an example, Wu explains that countries can learn from mistakes made by other

21. Xi Runchang, "*Shijie xin geju zhanwang*" (Prospects for the new world structure"), in Xi Runchang Shijie and Gao Heng, eds., (The new world political structure and international security), (Beijing: Junshi kexue chubanshe, 1996), p.46.
22. Ibid., p. 45.
23. Wu Chunqiu, n. 8, p. 94.

countries by analysing the development patterns of both the national strategy and the Comprehensive National Power of these particular countries.

High-technology weaponry "can change the appearance of warfare, but it cannot change the laws of victory in warfare."

RMA and its Utilisation

Since ancient times, Chinese strategists such as Sun Zi and Wu Zi have both propounded that victory (or defeat) in war can be predicted in advance if a comparison of certain factors that contribute to a country's strengths is done appropriately. The Chinese strategists of today also believe in this age old dictum and the present day CNP discourse is often shaped accordingly.

Li Qingshan, a People's Liberation Army (PLA) Colonel puts forth a similar argument in his book *The New Revolution in Military Affairs and High-technology Warfare*. He states "Through the analysis of belligerent countries' Comprehensive National Power, even before a war has begun, people can frequently know the results in advance."[24] He, however, concedes that as war develops, there will be fluctuations in the strengths and functions of the various component factors. Thus, what plays a direct role in the outcome of the war are the changes that take place in this comparison of forces during the process of war, as well as the results of diplomatic struggles, ideological struggles, and economic struggles.

Commenting on the RMA factor in CNP, he opines that RMA will not override previously existing premises for making strategic assessments and that high-technology weaponry "can change the appearance of warfare, but it cannot change the laws of victory in warfare". Thus, he links RMA and CNP by stating "…Historically, in numerous wars, the victors have been both those who have technically inferior weaponry and those who have technically superior weaponry. Technology is not the only factor determining victory or defeat in war."[25] However, its level of usage

24. Li Qingshan, *Xin junshi geming yu gao jishu zhanzheng* (The new revolution in military affairs and high-technology warfare)(Beijing: Junshi kexue chubanshe, 1995), p. 192.
25. Ibid., p. 191.

is still critical in determining the outcome of war and he goes on to state that RMA warfare "is still a comprehensive test of the level of countries' strength."

Taking the military line of approach, Li delineates CNP into five major components or areas—politics, economics, military affairs, science and technology, and foreign affairs—each of which is interlinked and is to be viewed within the ambit of its role in war. For Li, "Warfare is the continuation of politics and reflects a country's strategic intentions" – and RMA (and its usage) is a critical component in attaining victory since it is determined by a country's scientific and technological development.[26]

QUANTITATIVE FACTORS

Two prominent Chinese books propose a quantitative approach to the problem of evaluating CNP. These two studies are slightly divergent in their approaches to the common problem in that they originate from military and civilian perspectives since they are a product from AMS and CASS respectively. The two books are *Comparative Studies of the Comprehensive National Power of the World's Major Nations*, by a team of largely civilian analysts coordinated by Wang Songfen of CASS. The other book is *On Comprehensive National Power*, by Senior Colonel Huang Shuofeng of AMS who is deemed to have worked with Deng Xiaoping.

THE CASS STUDY

The book was originally published in December 1996, and it puts forward a detailed dissection of the characteristics of the CNP component factors. The book is fairly elaborate in describing measurement methodologies in their evaluation. It also provides extensive data tables from the results of examining the CNP of 18 countries.

Based on three guiding principles, this book divides CNP into eight major areas. They comprise natural resources, domestic and foreign economics,

26. See Wang Zhenxi, "The New Wave of the World Revolution in Military Affairs," *International Strategic Studies* 44, no. 2, April 1997, pp. 8-9.

science and technology, military affairs, government and foreign affairs capability, and social development. The three of the basic principles on which the authors relied to determine the above eight general factors include the following:

- Both material power (tangible factors such as economics, military affairs, etc.) as well as spirit power (the intangible factors, such as international relations, leverage politics, etc.) need to be included in an assessment of CNP.
- CNP is composed not only of actual power; but potential power also has a contributing role.
- The components of CNP and their roles have changed throughout history and will continue to do so in the future; therefore, new aspects may be added or dropped when evaluating different time periods.[27]

The components of CNP and their roles have changed throughout history and will continue to do so in the future.

The CASS Indexing System

Having taken a quantitative approach to evaluating CNP, one of the major tasks that the authors from CASS faced was to evolve and create measurable and uniform standards that can evaluate all the eight factors above as applicable to various countries. This was undeniably a complex task since it not only involved the measurement indices of tangible and intangible factors but also the correlation between them. Additionally, the authors wanted to include "both indexes for total amount, and indexes for amount per person; both quantity indexes and quality indexes; both efficiency indexes and consumption indexes."[28] Finally, the authors arrived at a matrix of 64 indices for the eight areas of measurement. These indices are enumerated in Table 1.

27. Wang Songfen, ed., n. 6, p. 36.
28. Ibid., p. 64.

Table 1 : The Comprehensive National Power Index Framework[29]

Natural Resources Manpower Resources: total population; life expectancy; the proportion of the economically active population in the total population; the number of university students per 10,000 people. Land Resources: the area of national territory; the area of cultivatable territory; the area in forest. Mineral Resources (reserves): iron; copper; bauxite. Energy Resources (reserves): coal; crude oil; natural gases; water energy. Economic Activities Capability Actual Economic Strength (total): Gross Domestic Product (GDP); industry production capability (electric energy production, steel output, cement output, logs output); food supply capability (total grain output, degree of self-sufficiency in grain); energy supply capability (volume of energy production, volume of energy consumption, crude oil processing capability); total cotton output. Actual Economic Strength (per person): GDP per person; industry production capability (electric energy production, steel output, cement output, logs output); food supply capability (total grain output, average calories per person); energy supply capability (volume of energy consumption). Production Efficiency: social labour production rate; industry labour production rate, agriculture labor production rate. Material Consumption Level: volume of energy consumption based on GDP calculations. Structure: the proportion of the tertiary industry in the GDP. Foreign Economic Activities Capability Total import and export trade; total import trade, total export trade. Total international reserves; international reserves (not including gold); gold reserves.

29. As cited in n. 5.

Science and Technology Capability

Proportion of research and development in the GDP; number of scientists and engineers; the number of scientists and engineers per 1,000 people; proportion of machinery and transportation equipment exports in total exports; proportion of high-technology intensive exports in total exports.

Social Development Level

Education Level: education expenditures per person; proportion of people studying in higher education; proportion of people studying in secondary school education.

Cultural Level: adult literacy rate; number of people per 1,000 who get a daily newspaper.

Health Care Level: health care expenditures per person; number of people doctors are responsible for; number of people nurses are responsible for.

Communications: number of people who have a telephone per 100 people.

Urbanisation: proportion of the urban population in the total population.

Military Capability

Number of military personnel; military expenditures; weapons exports; nuclear weapons (the number of nuclear launchers; the number of nuclear warheads).

Government Regulation and Control Capability

Proportion of final government consumption expenditures in the GDP; proportion of central government expenditures in the GDP; investigation through interviews asking nine questions.

Foreign Affairs Capability

Uses ten factors in a "nerve network model" to carry out a broad assessment.

Source: Wang Songfen, ed., *Shijie zhuyao guojia zonghe guoli bijiao yanjiu* (Comparative studies of the comprehensive national power of the world's major nations)(Changsha: Hunan chubanshe, 1996), p.69.

CASS Weighted Index Methodology

The evaluation of the CNP is basically a two-stage effort in which analysts from the Office of Statistics and Analysis at the Institute of World Economics and Politics (IWEP) at CASS divide their measurement into the Basic Plan and the Weighted Plan.

At the Basic Plan stage, first the basic 64 indices are calculated and standardised using various formulae through index calculation methods, which "combine R. S. Cline's comprehensive calculation method of assigning values and the comprehensive index calculation method used in the book *Japan's Comprehensive National Power*."[30]

Later, this data is separated into calculated unit values. The hard indexes are divided into two groups, direct indexes (those directly related to GDP growth per person) and indirect indexes (those inversely related to GDP growth per person)[31]. The former set of data takes the biggest value as 100, the latter set takes the lowest value as 100 to "successively calculate the deserved value of the different countries for those indexes."

For assessing intangible areas, the group often resorts to investigative methodologies in which a group of renowned experts are closely questioned on the subject and the results computer analysed quantitatively.

In the case of foreign affairs, which is another intangible or "soft area", the CASS group has designed a nerve network model with ten factors related to capability in foreign affairs activities—population, territory, natural resources, military affairs, economics, science and technology, politics, ideology, system of organisation, and international image. The values so allotted are standardised later. Thus, based on these different methodologies, the numerical value of the 64 indexes, the eight major areas, and the CNP eventually is calculated.

To overcome the aberrations and distortions that may arise during the Basic Plan stage, the Weighted Plan is resorted to[32] . For example, countries with extensive natural resources and relatively sparse population score high on CNP even though this is not a true reflection of their international standing,

30. Wang Songfen, ed., n. 6, p. 71.
31. As cited in n. 5.
32. Wang Songfen, ed., n. 6, p. 168.

economic or national power. The main reason for this aberration is their strength in per person rates of economic capacity and high standard of living (social factors). Secondly, certain issues and factors follow time specific regimes; for example, during times of conflict or less than war situations,weapon manufacturing and enhancing military capacity would enjoy *high national priority, while at others, would be less accentuated, hence, appropriate time specific revisions have to made periodically to ensure standardisation.*

Measuring military capacity and capability is also the one of the most important aspects of CNP along with the professional efficacy of the military in carrying out its duties in peace as well as in war.

Lastly, the number of indexes in each of the eight major areas are not equal (i.e. natural resources has 14, while foreign economic capability has two) but each index, regardless of its value or importance, is allotted the same weight eventually. [33]

Hence, during the second stage of CNP measurement, the quantitative results of the Basic Plan are revised through qualitative analysis.

However, in this analysis, some guidelines and dictums are kept in mind. Primarily, that economic development forms the most important activity for most nations in peace-time, hence, its primacy in CNP calculations. Meanwhile, measuring military capacity and capability is also the one of the most important aspects of CNP along with the professional efficacy of the military in carrying out its duties in peace as well as in war.

It is noticeable that the Chinese analysts themselves face this problem as to which factor to accentuate – a form of this debate is also visible between the military studies of CNP and the civilian one.

In any case, availability of natural resources forms the "material base" of CNP measurement by CASS.[34]

The different weighted values of factors are shown in Table 2

33. n. 5.
34. Wang Songfen, ed., n. 6, p. 169.

Table 2: Weighted Coefficients of Major Component Factors

National Power Factor	Weighted Coefficient
Total CNP	1.00
Natural resources	0.08
Economic activities capability	0.28
Foreign economic activities capability	0.13
Scientific and technological capability	0.15
Social development level	0.10
Military capability	0.10
Government regulation and control capability	0.08
Foreign affairs capability	0.08

Source: Wang Songfen, ed., *Shijie zhuyao guojia zonghe guoli bijiao yanjiu* (Comparative studies of the comprehensive national power of the world's major nations)(Changsha: Hunan chubanshe, 1996), p. 169.

In addition to the above, the different indexes of each of the constituents of major factors are also assigned weights. For examples, there are four indexes constituting the military factor. They include: the number of military personnel, military expenditures, weapons exports, and nuclear weapons (in case the country possesses them) and they are equally assigned weights of 0.25 each. Similarly, the science and technology capability factor has been divided into research and development in the Gross Domestic Product (GDP) and the index for technology personnel both have weighted coefficients of 0.30;

Based on these weighted revisions and by using the data generated for the 64 indexes as evaluated under the Basic Plan, the numerical value of the eight major areas and, finally, the calculated CNP for each nation is reached. The numerical values of CNPs were calculated for 18 nations for the years 1970, 1980, and 1990.[35]

It is interesting to note that forecasts of CNPs of these 18 nations were also made for the years 2000 and 2010. Known as Forecasted Weighted Plan, these were based on the principles of the Weighted Plan. The calculated predictions

35. n. 5.

were done by evaluating the potential future role of that particular nation and its futuristic influence/ capability with respect to the different component factors – the weighted coefficients of which were adjusted accordingly. To give an example, with the growing significance of education, communications research and development in particular, within the ambit of science and technology, the weighted coefficients for science and technology and social development level were raised from 0.15 to 0.17 and from 0.10 to 0.12, respectively for futuristic projections. On the other hand, the weights allotted to the two economic factors and military affairs capability remained the same though those for foreign affairs capability were reduced to 0.07. In all these predictions using the new weighted coefficients, the data gathered from the Basic Plan were taken as the base.

THE AMS INDEX SYSTEM

In comparison to the methodology used by the CASS system for calculating CNP, the AMS system is slightly different though the overall aim remains essentially the same. The essence of the calculation methods is propounded by Huang Shuofeng in his book *On Comprehensive National Power*. The book provides a fairly detailed analysis of the major component factors of CNP and their numerous indexes as seen from the AMS' (or rather Huang's) perspective.

Huang feels that relying only on theoretical research for analysing CNP is grossly inadequate and advocates the usage of systems theory and mathematical methods for developing a qualitative and quantitative approach to the problem. Consequently, Huang describes CNP as a large and complex system composed of many levels or sub-systems, within which there are interlinked component factors. Overall, he divides the CNP index system into four major index sub-systems. These comprise:

- **Material Power or Hard Power Factors :** made up of the hard factors, natural resources, economics, science and technology, and national defence
- **The Spirit Power or Soft Power Factors:** also known as intellect power, it determines the effectiveness of the material form (hard) national power. It

includes politics, foreign affairs, and culture and education. Both material and spirit power reflect a country's needed strength for existence and development.

- **The Coordinated Power:** reflects the leadership mechanism's organisation, command, management, and decision-making levels;
- **The Environmental Factor:** reflects the restricting conditions of Comprehensive National Power.[36] **This sub-system comprises three parts:**
  - the international environment (that analyses the world architecture with in the ambit of different balances of power):
  - the natural environment (a country's natural resources, ecological conditions, etc);
  - the social environment (the political set-up, hierarchy , economic and social systems).[37]

Commenting on the above four major index factors, Huang writes that there are no absolutes—even the hard factors contain some aspects that are soft in nature, but for the purpose of analysis, they are designated to a sub-system based on their dominant characteristic, for example, it is universally understood that national defence is a hard factor, but a few of its components like its associated ideology and military theory, fall within the ambit of being soft factors.

Each of the components of the major sub-indexes is itself a sub-sub-index, and together they all form a CNP appraisal index system. For each of these sub-sub-indexes, Huang provides detailed lists of their contents in his book. However, only a few have been elaborated below as examples and for the sake of comparison.

- Foreign Affairs Power Sub-system: Foreign political relations; foreign economic relations; foreign military relations; diplomatic activities capability; international contribution capability.

36. Huang Shuofeng, n. 14, p. 162.
37. Ibid., p. 164.

- National Defence Power Sub-system: Standing army (nuclear, conventional) and reserve forces; national defence investment; national defence science and technology and national defence industry; national defence bases and installations; strategic material reserves and logistics safeguards; national defence education and training; national defence system establishment; the national defence ideology of the people and troop morale; military theory.
- Political Power Sub-system: National strategy goals; political stability; policy level; the nation's leadership, organization, and decision-making capability; national embodiment power.
- Science and Technology Power Sub-system: Science and technology troops (scientists and engineers, technological personnel); investment in science and technology (total, proportion of the GNP); science and technology level (high science and technology, general science and technology); science and technology system; scientific and technological progress speed; scientific and technological progress contribution; scientific and technological results and applications.[38]

While working out "The Structural Networks of Comprehensive National Power System," Huang has adopted a slightly nuanced position towards defence/ military power in that he has attempted to delineate "direct" military power from "indirect" military power. Accordingly, while direct military power includes measures of nuclear forces and conventional forces, indirect military power, on the other hand, comprises associated aspects such as total armed manpower; the professionalism of the soldier, his weapons , their efficacy, weapons acquisitions, reserve and strategic reserve capability, logistic, etc.

The AMS Dynamic Equation

According to the AMS perspective, the foundation of calculating the Comprehensive National Power of any nation rests on the dynamic equation as conceived by Huang (AMS). Importantly, in establishing his equation,

38. Ibid., pp. 169, 170, 172.

Huang also emphasises the dynamic aspects of CNP by reiterating that one of the primary characteristic of CNP is that it is continuously evolving with the passage of time. This evolution is dependent not only on changes in global geo-political structures and the international environment but also on aspects like changing regimes of science and technology, micro and macro-economics, energy and foreign policy, etc,[39] hence, in an effort to deal with such a dynamic aspect dealing with variations and with changing developments of CNP, Huang assessed that a type of "motion equation" was needed. That was based on the principles of the systems theory, coordinated studies, and dynamics studies. Consequently, the results generated by Colonel Huang were quite different from those arrived at by civilians working at CASS.

The growth factor and development process of CNP has been described as "the process of taking a group of factors and turning them into output, under fixed domestic and foreign environments, and natural conditions." This process, Huang has depicted numerically by the equation that is also called Comprehensive National Power function

$$Y_t = F(x_1, x_2, \ldots, x_n; t)$$

In this equation:

the CNP n component factors are $x_1, x_2, \ldots, x_n$

the amount of their inputs is combined, and the output volume—the CNP—is represented by Y_t

t is the variable for time

$x_1, x_2, \ldots, x_n$ are functions of t.

This equation shows the relationship between the input amount of the individual component factors and the total volume of output.

Huang's efforts to deal with numerous interconnections and the deluge of associated data have led him to use "macro variables . . . with the biggest roles in the allocation, control, and guidance of comprehensive national output Y_t."

Contextually, he has selected three of the four major index sub-systems from his CNP index system to be the following variables:

39. Ibid., p. 175.

- Hard variables - represented by H_t ;
- Soft variables - mentioned as S_t;
- Coordinated variables, represented by K_t.

Hence, the new national power function can then be written as :

$$Y_t = F (H_t, S_t, K_t)$$

So that calculations can be made using this new form of the national power function, it is rewritten using Newton's third law, where F = kma:

$Y_t = K_t \times (H_t)\alpha \times (St)\beta$

In the above function:

H_t stands for the "mass" of CNP

S_t represents the "acceleration" of CNP

K_t is the coordinated coefficient

α is the "hard elasticity index"

β is the "soft elasticity index."

The two elasticity indexes also help in establishing if the particular country conditions are developed or developing and whether it is at war / facing unrest, or whether it is at peace and is stable .

In the AMS system of calculating CNP, it is obvious that the system has numerous sub-systems and sub-sub-systems; contextually the methodology for measurement like the CNP dynamic equation also has several layers of equations many of which are not explained or mentioned by the author, Huang. However, the author does provide examples of sub-equations for population growth, Gross National Product (GNP), national income growth, scientific and technological power, and national defence power.

Methods of Assessment and Measurement

In addition to the above equations and sub-equations, Huang has mentioned four different methods of measuring and evaluating CNP. The methods of assessment are:

- The index number method: This is used to compute the hard factors in the dynamic equation.
- A specialist evaluation method: This is used for assessing the soft factors in the dynamic equation.
- The weighted coefficients method: That is assigned to the coordinated factors.
- The vague judgment method: This method is used for assessing some of the undetermined factors.

Under the index number method, after the data have been generated through the different sub-equations of the CNP dynamic equation, index numbers are established for it. These index numbers are set based upon a unified ratio, in which the value of the US data from each equation is given the index number of 100. The indexes of the other countries being evaluated are then set accordingly. Later, using the new indexes, the CNP of the different countries is calculated using the national power function.[40]

One of the most potent aspects of measuring the CNP of nations has been that of predicting the values for the future— this has been carried out by Huang; however, the only explanation he provides of his methods to arrive at the projected values is: "In order to forecast the future world strategic structure, we used the Comprehensive National Power developments equation model, using the 'leading trend analysis method' to make calculations."[41]

REAPPRECIATION OF THE DYNAMIC EQUATION

In an effort to overcome some of the lacunae, Huang Shuofeng wrote his second book, titled *On the Rise and Fall of Nations*. In this book, Huang further develops his qualitative and quantitative analysis of the CNP in order to project its role in the prosperity and decline of nations.

The original dynamic equation as propounded by Huang also finds identical mention in his second book; however, he gives further details regarding the

40. n. 5.
41. Huang Shuofeng, n. 14, p. 220.

science and technology power sub-equation in his second effort.

One of the most potent aspects of measuring the CNP of nations has been that of predicting the values for the future.

Since the main thrust of his second book is mainly to evaluate the rise and fall of nations using the concept of CNP, Huang first calculates the 1996 scores of overall CNP and its various factors for six countries. In the reevaluation, it is discovered that his new quantitative analyses of the United States, Japan, Germany, Russia, China, and India differ from those he had derived in his earlier book seven years earlier.[42]

It is noteworthy that the original "Comprehensive National Power dynamic equation" measures only a country's strength at a given time; it does not indicate how this power and its component factors influence the nation in its development. Unfortunately, the older version of the equation allows for the comparison of CNP for different countries, but does not illustrate the outcome of the interaction and competition between these countries.[43]

To overcome the above constraints in the dynamic equation, the goal of the new one is to quantitatively analyse this "competitive and developing evolutionary process," in order to determine the rise and decline of nations. Accordingly, the author divides this aspect of rise and decline of nations) into two parts:

- Evaluating the individual country by itself,
- Assessing two nations that are in competition with each other.

The first situation can be used to analyse how a country's power is influenced by domestic conditions and the international environment which the author refers to as "an environment where the initiative is in one's own hands," [44]

42. n. 5.
43. Huang Shuofeng, *Guojia shengshuai lun* (On the rise and fall of nations)(Changsha: Hunan chubanshe, 1996), p. 379.
44. Ibid., p. 382.

Talking about the competing aspects between two countries, the potential results of such an eventuality could be categorised into four general categories.

The second part deals with a more intricate issue of how national strength is affected by the competition or interaction between two forces The equation can also be adapted to examine an internal struggle for power between a country's old state system and a new one with a new national strategy.[45]

Talking about the competing aspects between two countries, the potential results of such an eventuality could be categorised into four general categories:

- Both countries could get into a nuclear conflicts and be destroyed
- One country could dominate the other.
- One country could force another into a "fatal position."
- Both countries could coexist peacefully by promoting prosperity.

It is the last aspect that Huang states is to be regarded as the model for the "New World Order".

Table 3: A Comparison of Huang's CNP Statistics

	Score			Rank			As % of US Score		
Country	'89	2000	'96	'89	2000	'96	'89	2000	'96
United States	593	817	90	1	1	1	100%	100%	100%
Japan	368	537	67	4	4	2	62	66	74
Germany	378	558	62	3	3	3	64	68	69
France	276	385	-	5	6	-	47	47	-
England	214	281	-	7	7	-	36	34	-
Canada	137	177	-	10	10	-	23	22	-
Australia	113	148	-	11	11	-	19	18	-
USSR	387	648	-	2	2	-	65	79	-
Russia	-	-	58	-	-	4	-	-	64

45. Ibid., p. 385.

China	222	437	48	6	5	5	37	53	53
India	144	274	35	9	8	6	24	34	39
Brazil	156	268	-	8	9	-	26	33	-

Source: The scores for 1989 and 2000 are from Huang, *Zonghe guoli lun*, pp. 220-221. The scores for 1996 are from Huang, *Guojia shengshuai lun*, p. 405. Their scores as a percentage of the US score were generated by the author for comparison purposes.

HUBEI SCIENCE COMMISSION CALCULATIONS

The CASS team and Colonel Huang from AMS are not the only Chinese analysts to do research on CNP and attempt at calculating it. Numerous articles/books on international relations written by Chinese analysts attempt at predicting the CNP and the future evolution patterns of relevant nations and the futuristic security architecture of the international environment.

However, what sets the CASS and AMS studies apart from the rest is that unlike the others, that just mention the concept in generic terms and make predictions without proper explanations, these two studies provide extensive details and explanations about their assessment and calculation processes, as well as numerous data tables of their results.

Notwithstanding the above, it is important to briefly analyse the research done by some other authors. Contextually, research on the subject conducted in the early stages by Yu Hongyi and Wang Youdi of the Hubei Science Commission finds mention in the CASS study.

The formula used by them for calculating CNP was given as "function (F), dimension (D), structure (S), level (L), and four-dimensional vector comprehensive national strength (CNS) measurement formula, in which CNS = F (FDSL).[46] The FDSL measurement formula based on the calculation results of the 12 countries is shown in Table 4.

46. Yu Hongyi and Wang Youdi, *Zonghe guoli cedu pingjie* (Measuring the value of comprehensive national power)," *Keji jinbu yu duice* (Scientific and technological progress and ways of dealing with it) 1989, 5, in Wang Songfen, ed., n. 6, pp. 50-51.

Table 4: Hubei Science Commission CNP Calculations (1985)

Country	Function Dimension (F_D)	Structure Level L_S	CNP
United States	0.5049	0.9262	0.6838 (1)
Soviet Union	0.2048	0.8252	0.4111 (2)
Japan	0.1434	0.8815	0.3555 (3)
Germany	0.0854	0.8839	0.2748 (4)
England	0.0621	0.9178	0.2386 (5)
France	0.0609	0.8907	0.2329 (6)
China	0.0757	0.6409	0.2202 (7)
Canada	0.0489	0.9225	0.2123 (8)
Italy	0.0454	0.8757	0.1993 (9)
Australia	0.0207	0.9133	0.1374 (10)
India	0.0298	0.6256	0.1365 (11)
Egypt	0.0057	0.7509	0.0656 (12)

Source: Yu Hongyi and Wang Youdi, *Zonghe guoli cedu pingjie* (Measuring the value of comprehensive national power), *Keji jinbu yu duice* (Scientific and technological progress and ways of dealing with it), 1989, p.5, in Wang Songfen, ed., *Shijie zhuyao guojia zonghe guoli bijiao yanjiu*, pp. 50-51.

CICIR METHOD

Yan Xuetong from CICIR has also attempted calculating the CNP of nations. However, it is much more simplistic than the AMS or CASS methods. The explanations that are provided also prove to be inadequate.

In calculating the CNP , Yan has separated six factors which include

- manpower;
- natural resources;
- economics, politics;
- military affairs;
- history and culture.

Unfortunately, Yan refrains from providing a detailed explanation of the measurement process which he terms as "a simple index average value method . . . to conduct quantitative analysis."[47]

Yan does not seem to be interested in calculating the past CNP scores of the five countries for carrying out a trend analysis and surprisingly has refrained from predicting or forecasting the future CNPs of nations. However, he does state that the CNPs of China, Japan, and Germany are relatively tending towards becoming stronger while those of the United States, Russia, England and France are sliding towards a decline.

The study is optimistic about the future development and growth of China's national power and feels that by the 2020s,[48] China will probably become second only to the United States.

Table 5: Yan Xuetong's: Simple Average Value[49] of Major Nation's CNP

	United States	Japan	China	Russia	Germany
Manpower	1	0.5	0.3*	0.5	0.3
Natural Resources	1	0.04	0.7	1	0.1
Politics	1	0.5	0.7	0.5	0.5
Economics**	1	0.6	0.17	0.1	0.3
Miliary Affairs	1	0.14	0.3	0.6	0.11
Culture	1	0.9	1	0.9	0.9
Total	1	0.44	0.53	0.6	0.35

*In general, it is believed that 200 million is most ideal for the population of a great nation. China's population is well over that, so it has a negative effect on national power growth, added to which, China's overall education level is lower than that of the four other countries, therefore, its index is smaller than that of the United States, Japan, and Russia.

**The economic index is based on 1993 GNP; China's and Russia's indexes were attained by the average values of exchange and PPP calculations.

47. Yan Xuetong, *Zhongguo guojia liyi fenxi* (Analysis of China's national interests)(Tianjin: Tianjin renmin chubanshe, 1996), p. 88.
48. Ibid., pp.57, pp. 94-95.
49. n. 5.

Source: Yan Xuetong, *Zhongguo guojia liyi fenxi* (Analysis of China's national interests)(Tianjin: Tianjin renmin chubanshe, 1996), p. 95.

GROSS DOMESTIC PRODUCT INDEX VS CNP

Many economists and analysts consider the GDP of a state to be an excellent indicator of a nation's power and its capability, since it is defined as the total market value of all final goods and services produced in a year. However, other analysts differ and feel that it is CNP which provides a better reflection of a country's power and that GDP is just one factor to be taken into account within the holistic index of CNP. A closer examination reveals that a country's GDP and CNP rankings are not always the same but undoubtedly the two are very closely interrelated.[50]

While forecasting CNP, Huang does not provide any statistics on future GDP but, on the other hand, the CASS study group (with a large number of economists) estimates the GDP and its trends first in the process of forecasting CNP for the future. In their analysis of 18 countries, they found that in a majority of cases, their predicted GDP and CNP rankings for 2010 are very similar in both categories or off by one or two positions. The only exception being Russia since it is fifteenth in the 2010 GDP rankings, but sixth in those for CNP.

COMPARISON WITH SOME FOREIGN METHODS

Having had a brief overview of the two main studies and "systems" of measurement being followed in China to measure Comprehensive National Power (as understood by the Chinese), it may be relevant to assess the Chinese views on similar efforts by foreign authors.

In general, Chinese authors have proved to be explicitly critical of foreign quantitative analysis methodologies to assess national power. Contextually, three foreign formulae for assessing CNP have been frequently mentioned, both negatively and positively. The formulae are those created by Ray Cline, William Fuchs, and the Japan Economic Planning Department, Comprehensive

50. Wang Songfen, ed., n. 6, pp. 432-433.

Planning Office (in a study entitled *Japan's Comprehensive National Power).*

In 1984, when Premier Deng Xiaoping set up a team of Chinese scholars tasked to analyse the future security environment in the world, as part of a study on China's national defence strategy for the year 2000, the scholars studied Western literature on the subject. One of the initial Western authors studied was Ray Cline and his "National Power Equation" but his formula was discarded by Colonel Huang who considered it too "static" and was indifferent to the dynamic nature of CNP and its variations over time. One of the major reasons for such rejection was that Cline did not include science and technology as a factor and that his means for judging the soft, intangible factors were neither objective nor unified .

William Fuch's formala was also studied in detail but that too was rejected because it measured only hard factors while ignoring the soft ones.

Lastly, the Chinese scholars found the 1987 Japanese study "done in order to serve the Japanese Government's established guiding principles and policy."[51]. They (Chinese scholars) felt that the index system propounded by this study was too narrow and unscientific, leading it to be discarded. (Tong Fuquan and Liu Yichang, *The World's All Directional Economic War*.)

However, it would be incorrect to presume that all Chinese scholars have discarded Western methodologies for measuring CNP. In fact, a lot of the Chinese methods were partly "borrowed" from Westerners.

CASS, for one of their measurement techniques (as mentioned earlier) was unique in that they not only adapted aspects of Cline's methodology but amalgamated it with features of the Japanese study.

Again, in sharp contrast to Huang's observations of Cline, Xi Runchang regards Cline's standards to be "relatively objective," including the standards for the soft factors, (mainly on aspects such as strategy). Xi went on to use for his own calculation Ray Cline's national power equation,

$$P = (C+E+M) \times (S+W).$$

In the formula,

51. Tong Fuquan and Liu Yichang, n. 17, p. 234.

It is interesting to note that the concept of evaluating national power has undergone considerable changes even from the time of the Cold War.

P stands for national power
C refers to population and territory
E is economic power
M stands for military power
S refers to national strategy
W is national will.[52]

Amongst the criticism reserved for most foreign methods of CNP calculation, there is one study that has not only evaded criticism and but even managed to receive praise from Chinese quarters[53]. This study is an annual evaluation report of international competitiveness termed as the *International Competitive Power Report*. This is a yearly study, which commenced in 1996, is conducted by the World Economic Forum and the Swiss Lausanne Management Institute in Lausanne, Switzerland. It assesses far more nations for various factors than any of the Chinese studies.

SOVIET CONCEPT COF VS CHINESE CONCEPT CNS

It is interesting to note that the concept of evaluating national power has undergone considerable changes even from the time of the Cold War. The Soviet methodology to measure power was termed as *sootnosheniye sil* in Russian. These two words can be correctly translated as "correlation of forces," (COF) "relation of forces," or "relationship of forces" —all these conveyed the idea of a relationship or distribution of power.[54] It referred to a Soviet method of assessing world power and reflected Moscow's view of a bipolar world. During the Cold War and in consonance with the Soviet tradition,

52. Xi Runchang, n.21, p. 44.
53. The Chinese periodical *Strategy and Management* praises the report, saying that it is "an important foundation which different countries' government circles and business circles refer to when making policy decisions, and has extensive authoritativeness." It noteworthy that Chinese scholars have often contributed to this study See Zhongguo guoji jinzhengli baogao (China's international competitive power report), (Strategy and Management), no. 2, 1996, p.1.
54. See Raymond L. Garthoff, "The Concept of the Balance of Power in Soviet Policy-Making," *World Politics*, October 1951, p. 87.

policy priorities and strategy were derived from Moscow's evaluation of nations' relative power in the correlation. In this manner, the correlation evaluation of forces was multidimensional. It was a broader concept than the traditional Western concept of "balance of power."

It was a qualitative and quantitative method which comprised all things that determined relative power: public opinion, political allegiance, economic prosperity, class struggle, and military might. This holistic concept the analysts contrasted unfavourably with what they saw as a Western view too focussed on counting inventory.

The Soviets felt that an underestimation of the enemy's true military capabilities could lead to "adventurism" or actions incurring unwarranted risks.

The Soviets were very sensitive about miscalculating COF. They felt that an underestimation of the enemy's true military capabilities could lead to "adventurism" or actions incurring unwarranted risks (an action they could ill afford); while, on the other hand, an overestimation of strength could lead to "opportunism" or a failure to seize a gain, which a correct calculation of the COF would have permitted.[55]

The COF concept was supposedly dynamic because history is dynamic, but given the lack of information with regard the methodologies used, it is not possible to compare the CNS dynamism with that of COF.

Thus, we see that COF was in many ways similar to the CNP concept propounded by the Chinese though admittedly the latter is much more holistic. COF well suited the Cold War scenario whereas CNP with its military-economic foundation is much better suited for the dynamic variations of the multipolar world of today.

INDIAN CALCULATIONS

Given the growing popularity of the Chinese CNP concept as a important tool to measure the national power of a nation and, hence, to tailor strategies (and even tactics) on the basis of futuristic projections of CNP, the National

55. Ibid., p.92.

Security Council Secretariat (NSCS) attempted to evolve a "National Security Index (NSI)" on more or less similar lines.

Unfortunately, the precise methodologies of working out the NSI have not been revealed and are probably shrouded in secrecy as is the wont with most governmental matters; however, it is publicly revealed by NSCS that the NSI constitutes an average of five indices. These include, Human Development Index (HDI), Research and Development Index (RDI), GDP Performance Index (GDPPI), Defence Expenditure Index (DEI) and Population Index (PI).

Each of these major indices is further sub-divided into sub-indices, for example:

Human Development Index HDI: which reflects the socio-economic conditions of a country, is based on a number of sub-indices such as Life Expectancy Index, Education Index, Per Capita Income Index, etc

Research and Development Index (RDI): this is a reflection of the technological prowess of a country and constitutes the weighted average of three separate unequal indices, namely Patents Index, Index of Research and Development (R&D) Expenditure as a percentage of GNP and Index of R&D Scientists and Engineers per million.

GDP Performance Index (GDPPI): The GDPPI is important for calculating a country's overall economic strength and the rate at which this capability is evolving. The main index comprises the weighted average of two separate indices: the "GDP Index" and the "GDP Growth Index".[56]

The NSI suffers from numerous shortcomings, the primary one being that it is not known if the NSCS has been regularly calculating yearly NSIs for the 30 countries it had started off with. It is also not known if the NSI is used to predict a nation's power in the years to come. The efficacy of NSI as a tool in strategic decision-making is also open to debate. Apart from that, the ambit of the calculations is all too restricted and "static" in a generic comparison to the Chinese CNP calculations. The NSI, in addition, does not take into account the

56. "Evolving A Comprehensive National Security Index" available at http://www.financialexpress.com/news/evolving-a-comprehensive-national-security-index/73228/0

resource abundance, environmental health and good governance aspects of a country.

CONCLUSION

The modern concept of Comprehensive National Power was evolved by Chinese analysts during the mid-1980s on an impetus that was provided by Deng Xiaoping. It was a concept that was in consonance with China's national aspirations of achieving enhanced global power status in the near future. The urgency of calculating the future trends of evolving CNP as a measure to "compete better" was probably the rationale behind it. The trend toward world multipolarity and US decline accentuated this process.

It also identified the power potential of China's allies, adversaries and rivals apart from indicating which country would be best suited to exploit the RMA in times of war and less than war situations.

CNP scores were important to the Chinese because they could help identify the status of not only the concerned nation within the hierarchy in world politics but also of the Chinese with respect to that country. It also identified the power potential of China's allies, adversaries and rivals apart from indicating which country would be best suited to exploit the RMA in times of war and less than war situations. Thus, providing a clear indication as to which side had a clear advantage and a possible victory in war.

Two contending scientific teams, one with a military background (AMS) and the other with civilian experts (CASS), calculated the estimates of the futuristic CNP scores of the major powers for the year 2010. Both teams claimed to use sophisticated quantitative methodologies that had been developed because of the deficiencies in the techniques used by the West (and Japan) to measure future growth rates in national power.

However, the importance of the CNP calculations lies in their deciphering the future course of action for "competing" in the hierarchy of world politics and its usage for adjusting national strategies accordingly. In the Chinese context, the CNP scores seem to have been well used for "fine tuning" the

national approaches – but in the case of other countries like India (which not only have their own methodologies but also come to their own conclusions by deciphering of available data), it is debatable if such information is ever templated on conceptual policy directives.