CHAPTER I
THE CONCEPT OF MARITIME POWER

This chapter examines the concept of maritime power as it has developed over the years among several states of the world. It highlights the elements that constitute maritime power and presents models that denote the inter-action between elements of maritime power, naval missions and force structure of navies and undertakes a quantitative assessment of maritime power. It also highlights how states have exercised maritime power to achieve national objectives.

The chapter is divided into four sections. The first section highlights the growth and understanding of the concept of maritime power among the United States of America, Britain, USSR, India and China. The second section argues that the constituents of maritime power are many and varied and synthesizes the writings of eminent maritime strategists. It undertakes an examination of various input/output models propounded by these strategists and suggests a more comprehensive input/output model. The third section attempts to determine a mathematical equation to determine the maritime power of a state. The last section highlights how states employed maritime power to safeguard maritime interests.

Sea power or power at sea has a long and a well-documented history. Since ancient times, civilizations and economies depended on sea-based commerce for their growth and prosperity. Managing maritime affairs was a well-established practice. States enacted land battles at sea and used sea power to achieve maritime dominance and supremacy. However, no attempt was made at theorizing naval warfare. Consequently, the practitioners of sea power did not develop any maritime strategy. But the importance and exercise of sea power had come to be realized by one and all: monarchs, statesmen and mariners.
Over the years, naval war fighting has undergone major changes. Technological developments and the new nautical regime created by the UNCLOS have transformed the nature of warfare and maritime intercourse. For some, though, sea power has remained synonymous with warships, submarines, aircraft carriers and navies. Strategists and practitioners of sea power have re-examined its constituents, importance and utility. They prefer to address "sea power" as "maritime power" since it encompasses a much broader definition.

AMERICAN MARITIME THINKING

The term maritime power means different things to different people. It is understood as narrowly as "navy" for distant interventions or as broadly as the ability of a state to use the sea to its optimum. In considering what maritime power (sea power) is, it is important to examine the answer given to this question by Rear Admiral Alfred Thayer Mahan, United States Navy. Mahan, through his most famous work, *The Influence of Sea Power Upon History 1660-1783*, introduced the concept of sea power. He sought to explain sea power in its broadest context and discovered that British dominance of the sea was a major factor that allowed it to challenge its opponents. Mahan explained Britain's success by developing a simple deduction: greatness and strength are the products of wealth derived from trade: to protect this wealth, Britain possessed a powerful navy.¹ He described sea power as the ability of a country to use the oceans for national advantage and argued that nations seek sea power as "a great highway" that provides a means of cheap transport. His thesis was that no nation could aspire to be a great power unless it

effectively used the sea for both commercial and military purposes. Naval warfare, according to Mahan, was a contest for supremacy, and the objective was to drive the enemy navy and mercantile marine off the oceans so as to keep the great highway open for oneself and deny it to the other.  

Mahan never clearly defined the term "sea power", though in 1897 he remarked that it was "at once an abstraction and a concrete fact". Nor did he clearly distinguish it from the ideas of "command of the sea" and "sea control". Interestingly, he used these terms as if they were synonymous. However he was convinced that sea power was based on three interlocking factors i.e. navy, commerce and colonies. The fighting instrument, i.e. the navy, enabled a state to acquire colonies and territories. This encouraged trade and maritime enterprise resulting in wealth and prosperity. He concluded that being a great power meant being a sea power and that sea power meant commercial and naval strength.

As for America (his own country), Mahan was convinced that it did not possess any of the characteristics of a sea power. American thinking centered on the old tradition of coastal defence and commerce raiding. The navy was designed and employed for limited roles. Mahan dismissed commerce raiding as the weakest form of naval warfare. To substantiate his argument, he cited the French experience. British ships had successfully challenged the French commerce raiding forces, and this experience had highlighted the importance of sea power.

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3 Ibid., pp.31-32.
4 Till, op.cit.,p.33.
The Mahanian philosophy about the nature of sea power rested on six factors, which he called "elements of sea power". These included.\(^5\)

(i) Geographical position.

(ii) Physical conformation.

(iii) Extent of territory.

(iv) Population (size and character of the people, their maritime orientation and an ability to absorb technology).

(v) Character of people.

(vi) Character of the government.

As a maritime strategist, Mahan stressed the importance of geography. He argued that geographical conditions determined the sea power of a state. Britain, with no land borders to defend, concentrated on the seas. This was of great advantage to her over France and Holland in terms of sea power. Britain’s geographical location served strategic advantage both in terms of access to seas, as also to control the great thoroughfare of the world’s sea borne trade route. He observed that the Mediterranean Sea was of tremendous commercial and military importance, more so than any other water body of its size. For the United States, the Caribbean Sea and the Panama Canal offered similar condition as the Channel to England and Suez to the Mediterranean states.\(^6\)

According to Mahan, the seaboard of a country is one of its frontiers. A country with a long coastline but no ports could never aspire to be a sea power.\(^7\)


\(^7\) Mahan, op.cit., pp.35-42.
It would be at a great disadvantage because it would be unable to engage in sea borne trade, and have no shipping or navy of its own. Ports and harbours were a source of strength and wealth, and more so if located at the outlet of navigable streams. This would naturally facilitate and encourage both domestic and foreign trade. However, these could become a source of weakness if not properly defended. Citing the example of France, Mahan argued that it had few military ports in the channel but excellent harbours in the Mediterranean. These were favorably located for both internal and external trade.

The “extent of territory” of a nation also determined sea power of a state. It is not the area in square miles that a country possesses that is important but rather the length of its coastline and the disposition of its harbours that are to be considered in evaluating sea power. The inlets available along the coast are a source of strength, and could also be a source of weakness of a state.

Geographical factors or physical conditions alone did not build sea power; the population of a state was an important determinant. This element of sea power referred to the number of people who earned their livelihood from the sea and were at least readily available for employment on board ships. A strong maritime community was a source of strength for Britain. Mahan admitted that the United States was deficient in this element and the foundation could be laid only if there was a large maritime community under its own flag. Those would naturally build related maritime industries, which scarcely existed in the United States at that time.

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8 Westcott, op.cit., p.35.
9 Mahan, op.cit., pp.35-42.
10 Ibid., pp.44-49.
11 Ibid., p.49.
One of Mahan’s least persuasive ideas about the elements of sea power was the importance he attached to “national character.” He observed that the necessity for commerce enabled Britain a unique success in colonizing nations. The English naturally and easily settled down in their new countries based on identified interests and “no restless eagerness” to return. Though the Dutch had more colonies than Britain in 1650, they colonized purely for commercial interests. Mahan noted that “placid satisfaction with gain alone, unaccompanied by political ambition” resulted in the Dutch not doing so well as Britain.

Last but not the least, Mahan argued that the character of the government and the accompanying institutions were an important factor in determining sea power of a state. He noted that it is the government that can provide directions for growth of maritime enterprise. England reached the greatest height of sea power because the government aimed at becoming a great maritime power. However, this has to be supported by its people and institutions for advancing national interests. This is not to suggest that governments without popular support have not created great navies or encouraged sea commerce.

**BRITISH MARITIME PRACTICE**

British maritime thought owed a great deal to Sir Julian Corbett. Like Mahan, Corbett derived from his historical research the principles governing the conduct of maritime warfare. He offered no general theory of sea power; instead,

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12 Ibid., pp50-58.
13 Ibid., p.57.
14 Ibid., pp.58-89
15 Ibid., p.88.
he focused his thoughts on the nature of maritime strategy and the purpose of naval warfare. By strategy he meant the principles governing a war in which the sea is a substantial factor, while naval strategy determined the movement of the fleet after maritime strategy had determined what part the fleet should play in relation to land forces. 17

Command of the sea is the central issue in Corbett's thinking about maritime warfare. It is identified with the ability to use sea communications for military and civil purposes and to deny such use to the enemy. 18 Corbett makes an important distinction between land and sea warfare. In land warfare, the objective is seizure and holding of enemy territory; in naval war the objective is to gain and secure the use of the seas.

In 1890, Corbett wrote that the real importance of maritime power is its influence on military operations. 19 He believed that England's failure, during the reign of Queen Elizabeth I, to achieve a decisive success on the continent was due to the lack of a proper army. Admiral Jackie Fisher, British First Sea Lord (1904-1910) summed up Corbett's views by stating "The army is a projectile to be fired by the navy." 20 Like Mahan, Corbett was convinced that sea raiding or attack against sea borne trade was an indecisive and wasteful form of warfare. He appeared to be more interested in commerce protection than commerce destruction. 21 Corbett's insistence that naval strategy was but part of a larger maritime whole also influenced British maritime practice.

17 Gray, op.cit., p.39.
18 Ibid.
19 Ibid., p.40.
20 Ibid., p.41.
21 Ibid., p.43.
In 1995, the UK Royal Navy released a publication entitled *The Fundamentals of British Maritime Doctrine, BR 1806*. Earlier, the U.K. Army had published British Military Doctrine and the Air Force produced *AP 3000*. *BR 1806*, the number assigned to the old Naval War Manual, was retained in order to reflect the fact that doctrine is a long-standing concept for the Royal Navy. *BR 1806* is specifically concerned with the application of maritime power at sea and maritime power projection from sea. It notes that maritime power is inherently joint in nature and emanates from forces drawn from all three services, both sea and land based, supported by national and commercial resources, exercising influence over the sea, land and air environment. The document does not define maritime power but discusses the nature of maritime power. Maritime power is “military, political and economic power exerted through an ability to use the sea”. It points out that power at sea has been traditionally used for “general economic well being” or “survival of sea dependent states”. The publication does not specify the constituents of maritime power and leaves it open to the extent that it also encompasses commercial maritime interests, size of resource zone, ship building capacity and others, which are often seen by both classical maritime strategists and modern practitioners as elements of maritime power.

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24 *BR 1806*, op.cit., p.57.

25 Ibid., p.54.
Some eighty years later, during the Cold War, Mahanian thought on sea power appeared in the Soviet Union. Admiral SG Gorshkov, Commander-in-Chief, Soviet Navy expounded his views on sea power. He wrote a series of articles that appeared in the Soviet journal *Morsky Sbornik* in 1972-73 and in 1976, published a book *Sea Power of the State*. The writings reflect a good understanding of the elements, requirements and advantages of a modern sea power.

Admiral Gorshkov argued that the fundamental difference in the understanding of sea power by the Soviet Union and the imperialist powers stem from the latter's "class essence". It (sea power) also determined the goals, tasks and means of applying various components, notably the navy, which in the imperialist states were assigned the role for world dominance. For the Soviet Union, the main goal was to build communism, and sea power was one of the important factors in strengthening its economy and consolidating links with countries friendly to it.

Like Mahan, Gorshkov believed that geography, economics and the character of the leadership determined sea power. He defined sea power as "the ability of a state to study (explore) the oceans and harness its wealth; the merchant and fishing fleet and their ability to meet the needs of the state and a navy.

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27 Ibid., p.1.
28 Geoffrey Till, "Luxury Fleet? The Seapower of (Soviet) Russia", in N.A.M. Roger (ed.), *Naval Power in the Twentieth Century* (London: Macmillan, 1996), p.14. According to Till, for the Russians, the geography was a strategic and a commercial hindrance and it divided the Russian fleet making concentration of force difficult. Till also notes that, for the Russians, Mahanian model (elements of sea power) seemed to work in reverse, i.e. instead of power at sea leading to power on land, it was failure on land that produced failure at sea. This was so
matching the interests of the state”. He qualified this by stressing that the level of economic and social development of a state and the policies it pursued ultimately determined sea power. The importance of a strong navy was a predominant theme in Gorshkov’s writings. He considered the navy as the guarantor of security.

According to Gorshkov, the sea power of a state was a system characterized not only by the presence of links between its components (military, merchant shipping, fishing scientific research fleet, etc) but also by the inseparable union with the environment, i.e. the ocean. Therefore, the influence of the oceanic environment on the economy of a state was tremendous and multi faceted. The sea was an important source of food, hydrocarbons, energy and minerals.

Another significant feature of the ocean, according to Gorshkov, was that it had traditionally provided a cheap mode of transport. This role had remained unchanged and the military significance of SLOCs has been well understood. Although seas and oceans had played an important role in the development of society and trade, scientific exploration of the oceans had remained underdeveloped. Oceanographic research had helped in weather prediction, navigation and ship design. It had also helped in environmental protection.

Gorshkov believed that increased interest in ocean research was an important component of seapower, and the Soviet Union needed to increase its efforts in this science. Similarly, pollution of seas and shore was a matter of concern to Gorshkov. He recalled the words of Karl Marx “Even the whole of society, the nation and even all simultaneously existing societies taken together are not the

because “bases” were often treated as a strategic commitment than as source of strength and the sea was not often seen as a window out into the world.

30 Ibid., p.16.
owners of the earth. They are only its occupiers using it as *boni patres familias* and must leave it improved for the next generation".31

Gorshkov was convinced that shipping and shipbuilding formed an important component of sea power. He argued that merchant fleet remained a universal component of sea power of a country.32 It served a nation both during war and peace. Besides being an important means of economy, the mercantile marine of a state was an important support element for the navy during war. He observed that the merchant fleets of capitalist countries were being developed keeping in mind the requirements during war as a means to transport men and material.33

As regards ship technology, Gorshkov was well aware of the changes in ship design and propulsion systems. An advanced shipbuilding industry was a reflection of the military and economic power of a state. An important adjunct to merchant fleet is the port. The changes in ship design, size and nature of cargo had direct implications for port infrastructure. Construction of deep-water ports, specialized berths and modern handling equipment posed major challenges to sea based commerce. Gorshkov noted that to be a sea power, states needed to develop maritime infrastructure to keep abreast of changes in ship technology. The fishing fleet was an important component of sea power. Besides its basic task of ensuring the supply of food, it served several other tasks including oceanography, landing troops and even intelligence duties.

31 Ibid., p.25.
32 Ibid., p.29.
33 Ibid., p.30.
Another facet of Gorshkov's understanding of imperialist sea power was his appreciation of big businesses involved in the economies of overseas countries. These businesses used raw materials of the host country and produce goods for exports. This had resulted in enhanced sea borne trade, and the expansion of economic monopolies. Gorshkov considered these institutions as accomplices in exploiting the peoples of these countries. This in turn made them dependent on the imperialists for economic, political and military assistance.

These several material elements of sea power required the all-important human resource to operate them. Gorshkov noted that the sea power of the Soviet Union primarily rested on the remarkable contingent of professional seafarers who devoted their lives to the very tough vocation of the sea.

INDIAN MARITIME OUTLOOK

India too has a long maritime history. There have been periods of maritime glory in Indian history: the Sri Vijaya, Chola and Maratha kingdoms had a flourishing maritime enterprise. Indian mariners undertook expeditions to South East Asia, Africa and the Persian Gulf. The Indian Ocean was the center of maritime activity and therefore generated maritime enterprise.

In modern times, the British built a limited maritime infrastructure in India to support their colonies in South East Asia and Africa. They established the Royal Indian Marine (RIM) in 1892 comprising of seven ships and about 2000 men.

34 Ibid., p.2.
35 Ibid., p.46.
37 Ibid., pp.20-22. In 1829, the Bombay Marine was assigned the new nomenclature, the Bombay Marine Corps but by 1830 this was changed to
The RIM participated in campaigns in the Mediterranean, Persian Gulf and Burma and performed convoy duties in the Atlantic and the Pacific Oceans. In subsequent years, the British did not expand the RIM. Their basic strategy for India rested on commercial interests aimed at maintaining trade links with the homeland.\textsuperscript{38} They did not encourage Indian participation in maritime matters. This resulted in a total lack of maritimeness in India.\textsuperscript{39} Before their departure, they left behind a few naval ships.\textsuperscript{40} Over the years these have grown and the maritime infrastructure has made progress.

The very location of India on the globe lends it maritimeness. Cartographers have aptly named an entire ocean after India. Although this fact is deeply rooted in Indian maritime strategic thinking, no theories on the application of maritime power have been developed. Much of the understanding of matters maritime is still based on British thought and practice.\textsuperscript{41} Besides, there is a tendency to look at maritime power as narrowly as the navy or simply maritime infrastructure.

Indian writings on maritime power or sea power draw inspiration from Mahan and British articulations. Sea power is described as “the ability of a state to

\textit{Indian navy}. This also changed to \textit{Indian Marine} in 1892, and the navy was rechristened as \textit{Royal Indian Marine} (RIM) in 1892. The RIM was reconstituted as a combatant force in 1928, and on October 2, 1934, the \textit{Royal Indian Navy} (RIN) came into being with Naval Headquarters at Bombay.


\textsuperscript{39} Ibid.,

\textsuperscript{40} Singh, op.cit., p.40. In 1947, under the Armed Forces Reconstitution Committee (AFRC), the Indian navy received 4 sloops, 2 frigates, 1 corvette, 12 minesweepers, and ten minor craft.

\textsuperscript{41} Organisationally, the Indian navy, still follows the UK Royal navy management system, logistics chain and, till very recently, the Indian navy flag had the Royal navy ensign's “George's Cross".
use the sea. This depends in large measure on its possession of a naval force, merchant marine, fishing and oceanographic fleet, port facilities, shipbuilding industry and the system of marine finance and insurance”. This falls short of including important constituents such as the EEZ, seabed area, and technological capability to exploit these resources and the all-important factor of geography.

Sea power is also described as “that part of the maritime strategy with which a nation attempts to achieve predetermined economic and political goals”, and maritime strategy is defined as “the total response of a nation to the ocean around it”. There is a tendency in India to confuse maritime power with maritime strategy.

The more contemporary writings describe maritime power as military, political, and economic power exerted through an ability to use the seas. A distinction is made by explaining military maritime power as the ability of a state to influence events through amphibious and ship launched attack operations. Naval forces are considered an element of maritime power to further national interests, be they economic, diplomatic or strategic.

According to Vice Admiral R.B.Suri:

Naval power is that element of military power associated with forces, ships,

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45 Discussions with Admiral Sushil Kumar, Chief of Naval Staff, in November 2000 at New Delhi.
submarines, aircraft, naval marines…that operate primarily on, over, under or from the sea.\textsuperscript{46}

Despite these varying views, most practitioners are agreed that maritime power encompasses a much wider definition.

**CHINESE MARITIME UNDERSTANDING**

As far as China is concerned, there have been periods of maritime glory too. During the period between the Song Dynasty and the Ming Dynasty, China’s imperial will focused its attention overseas. Several voyages were dispatched to distant lands as far as Africa, and China could be regarded as one of the strongest sea powers in that period. Ming Emperor Ren-Song noted “To make China rich and strong, we (China) must control the seas. But while wealth comes from the sea, danger does also”.\textsuperscript{47} Subsequent Chinese rulers began to look inwards, and maritime enterprise took a back seat.

In the nineteenth and the twentieth centuries, the Chinese were the victims, not the exponents of sea power.\textsuperscript{48} China was frequently attacked from the sea. The 1874 Japanese invasion of China resulted in its first coastal defence planning conference. The defeat in the Sino-French naval battles in 1894 came as a rude shock to the Qing Dynasty rulers. They recognized the crucial significance of reinforcing coastal defences and building a strong navy. In this period, a Navy


\textsuperscript{48} Ibid.
Board was formed with the explicit mission of building a strong navy. However, the momentum was lost with the onset of the warlord period.

In the post World War I period, Sun Yat-sen recognised the importance of naval power. He stated, “since the great changes in world forces, national might often depends on the navy, not the army, with the naval victor often having the superiority of national might”.\textsuperscript{49} It is clear that Sun Yat-sen had understood the neglect of naval power by Chinese feudal rulers resulting in China losing its territory and sovereignty to Western powers “which has kept China from becoming a nation”.\textsuperscript{50} He laid out the core of his sea power thinking as defending sovereignty and sea borders, maritime rights and interests, and standoff invasion from the sea by the powers. After Sun Yat-sen’s death, maritime thinking took a back seat. The Kuomintang Government adopted a passive defence strategy and made little progress in strategic maritime theory partly because of the Japanese occupation of the Chinese coast till the end of World War II.\textsuperscript{51}

After the communists came to power in China in 1949, the leadership once again began to salvage some maritimeness. The maritime infrastructure was developed with the Soviet Union’s assistance. The Chinese built merchant ships and naval combatants. There was a maritime ambition but this was limited in outlook primarily due to the domination by Red Army leaders. Since independence, Chinese maritime strategic thinking has grown and developed into a sophisticated body of thought. The four modernisations resulted in coastal zone development programmes and contributed to the national economy. In the late

\textsuperscript{49} Ibid.
\textsuperscript{50} Ibid.
\textsuperscript{51} Ibid.
1980's, Chinese academics conducted studies on the concept of "control of the seas". The Chinese believe that to build China into a real maritime power, their country must intensify studies relating to marine environment, resource exploitation, and build a powerful navy to safeguard their maritime interests.

Several changes in the 1990's intensified the maritime dimension of China. In 1992, China ratified the 1982 Law of the Seas Convention extending jurisdiction over distant islands. In 1996, China formulated China Ocean Agenda 21 and put forward a sustainable development strategy for China's maritime programmes. The basic constituents of the strategy are: (a) effectively safeguard the state's maritime rights and interests, (b) rationally develop and utilize marine resources, (c) give positive protection to marine eco-environment, (d) realize the sustainable utilization of marine resources and marine environment, and (e) coordinated development in the maritime field. Towards that end the Chinese have developed a maritime development and protection strategy aimed at comprehensive marine management. China is constantly developing a scientific and technological base for harnessing maritime power.

Admiral Liu Huaqing is a contemporary exponent of Chinese maritime ambitions. An alumnus of the Soviet Voroshilov Naval Institute, Liu was the Commander-in-Chief of the PLA Navy from 1982-86. Later, he was appointed as the Vice Chairman, Central Military Commission.

52 Zhongguo Junshi Kexue. op.cit.
53 Ibid.
He is often referred to as the Chinese "Mahan" or "Gorshkov". As a practitioner and a strategist, Liu was convinced of the relevance of maritime power for China. He believed that if China was to become a great power, it must develop maritime capabilities. Liu argued that sea power was crucial and China must develop a navy capable of defending her maritime interests. Liu believed that there was intense competition among nations to carve out resource-rich areas and the navy had an all-important task of guarding China's maritime interests. Thus, a formal and a formidable basis was laid for furthering maritime power.

**MARITIME KEYBOARD**

A *tour de horizon* of maritime thought over the last hundred years or so clearly indicates that the concept of sea power has undergone a major transformation. From classical Mahanian thought to the contemporary interpretation, several new elements have emerged. Technology, UNCLOS and the ever-changing nature of maritime intercourse have impacted on the constituents of maritime power. States have become more conscious of their ability to use the sea to their advantage. They believe that sea is not only a medium to fight on but also something to compete and fight for.

Sardar KM Panikkar quotes Khaireddin Pasha, the Turkish admiral in the Mediterranean who was confronting the Christian world in the fifteenth century, as saying, "He who rules on the seas will shortly rule on the land also." One thing on which all writers of maritime strategy are agreed is that the constituents of maritime power are many and varied. These depend on each other to a remarkable degree and must be assiduously fostered by the leaders of a country if they want to be strong at sea. This body of thought of prominent maritime strategists and practitioners has had a major impact upon the state's desire to possess a certain degree of maritime power. Therefore, an assessment of what constitutes maritime power is essential.

Geoffery Till, a noted author on maritime affairs, synthesised several writings on the concept of sea power and presented a basic input/output model of sea power. The inputs are what he calls "sources" and "elements" and the output is "sea power". The inputs are based on classical Mahanian "elements of sea power" wherein maritime community, resources, styles of government and geography are considered. Based on Richmond and Roskill's idea of sea power, Till identified merchant shipping, overseas possessions or bases and the fighting instrument as the three material elements of sea power.

Although this model is in conformity with the basic Mahanian approach, it does not take into consideration the subjectivity and objectivity of the constituents.

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61 Till, op.cit., p.75.

62 Ibid., p.13.

63 Gray, op.cit., p.13.
of the input. For instance, it is difficult to determine the quality of the maritime community, determine the nature of resources, measure geography and calculate the style of government. Resources could be material, monetary, living, non-living or even the population as a human resource base. Besides, the constituents have not been divided into political, economic, geography and military factors to facilitate a clear understanding of the role of a particular constituent.

However, Till agrees “sea power is probably the most obscure concept in the whole lexicon of maritime strategy.”\(^\text{64}\) Besides Till’s focus is not on the “fighting instrument” or the navy and its mission and therefore leads to confusion in determining the constituents of the output with the input.

J K Gamble presented his model of maritime power also based on an input/output schema (Figure 2).\(^\text{65}\) The inputs are land area, shoreline length, exclusive economic zone, fisheries resources, geographic locale, offshore oil, and so on. The output is population, gross domestic product (GDP), number of ships, shipbuilding, and fish catch and marine treaties. Both the inputs and output are objective and quantifiable.

\(^{64}\) Ibid., p.12.

\(^{65}\) Cited in Kearsley, op.cit. p.113.
Input / Output Model of Maritime Power by Geoffrey Till

Figure 1

Input / Output Model of Maritime Power by J.K. Gamble

Figure 2
Figure 3

Input / Output Model of Maritime Power by Harold J Kearsley

Figure 4

Input / Output Model of Maritime Power by Vijay Sahuja
The basic flaw with the model lies in the output side. The constituents in the output are essentially the inputs. For instance, the number of naval ships of a country, shipbuilding capacity, and capability to catch fish are a measure of a state's reaction to sea dependence and not related to sea dependence itself.  

Harold J Kearsley has divided the constituents of maritime power into three major domains, i.e. physical, economic and political (Figure 3). These have been further subdivided into subjective and objective. The inputs undergo filtration through a decision process. Kearsley notes that the three groupings are not distinct, nor are they totally black and white in their division. It may be that a particular constituent will find itself located in more than one domain. That is, resources living and non-living, located in the physical domain, would find a logical position in the economic domain too. Similarly, shipbuilding can find itself in the economic and political domains based on the resource benefits made available to the shipbuilding industry by a government and maritime tradition.

There are weaknesses in this model. The resultant output of the model is essentially the fighting instrument, i.e. the navy and its utility for naval operations and diplomacy. In fact the fighting instrument is an input component and an instrument to safeguard maritime interests. Therefore, Kearsley has incorrectly positioned this constituent in the model. The model makes no attempt to include constituents such as level of scientific research and the information technology base of a state.

It is argued that input components of the above models have undergone change and therefore require a revision. A more comprehensive model would

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66 Ibid., p.114
67 Ibid.
include five domains: geographical, military, political, economic and technology (Figure 4). It is clear that the military domain is an input and is subject to decision processes and should be considered separately. The revolution brought about by information technology has transformed the nature of maritime interaction and therefore needs to be considered as a separate domain. This model is better equipped to undertake an objective assessment of comprehensive maritime power of a nation. The inputs are tangible, and those that are subjective can be computed by using numerical coefficients.

**MARITIME CALCULUS**

Maritime power is a mix of the geographical, economic, political and technological strengths and weaknesses of a state. It is also determined by the military component (both nuclear and conventional). While some of the constituents are tangible, some are intangible, and are usually described in terms of national will, maritime tradition and national strategy. A sound maritime strategy requires an objective calculus of several elements that constitute the maritime power of a state.

It is true that a realistic assessment of maritime power is an extraordinarily complex empirical problem. The inputs have varied from time to time and can encompass a large number of elements. Ray S Cline put forth a formula to determine the power of nations in the international context as a basis for planning American defence and foreign policy. The formula reads as follows:

\[ P_p = (C+E+M)(S+W) \]

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Its terms are defined as:

\[ P_p = \text{Perceived Power} \]

\[ C = \text{Critical Mass} = \text{Population} + \text{Territory} \]

\[ E = \text{Economic Capability} \]

\[ M = \text{Military Capability} \]

\[ S = \text{Strategic Purpose} \]

\[ W = \text{Will to Pursue National Strategy} \]

In order to undertake an empirical analysis of maritime power, this study has adapted Cline’s equation. For the purpose of assessment of maritime power it would be useful to group the constituents into at least five domains: geographic, economic, military, technology and political. The terms for these domains can be referred to as:

\[ P_{mp} = \text{Perceived maritime power} \]

\[ G = \text{Geographical factors} \]

\[ E = \text{Economic capability} \]

\[ M = \text{Military capability} \]

\[ T = \text{Technological capability} \]

\[ P = \text{Strategic purpose of maritime power (S) and a will to pursue national Strategy (W).} \]

Following in Mahan’s footsteps, the first factor for measuring maritime power is geography. This is essentially based on the length of the coastline, land area ratio, population, size of EEZ, area for seabed exploitation, number of harbours and size of population and maritime community. All these factors are tangible and can be quantified objectively. The first approximation therefore becomes:

\[ P_{mp} = G \]
This is crude over simplification of the complex problem and therefore requires additional factors and coefficients to make a more accurate assessment. Given that the United States, China, India, Canada, Australia, Philippines, Fiji and Brazil have large EEZs, long coastline and seabed exploitation areas, this should mean that these are major maritime powers. But exceptions would have to be made in the case of Philippines and Fiji who have large EEZs but are not major maritime powers. The above equation becomes more useful if:

\[ P_{mp} = G + E \]

The material and economic wealth of a state are an important source of maritime power. Economic strength is the basis on which a nation satisfies the needs of its people for goods and services, and also on which it is able to build its organized military capability. The maritime power of a state is dependent on its merchant shipping, fishing fleet, level of development of ports, GDP, critical mineral resources, ship building, ship repairing, maritime trade, energy production, hydrocarbon reserves, size of marine related industry and sea based food resources. These elements are also quantifiable. It is possible to rank list maritime nations to determine the combined economic strength/weakness of a state.

If perception of maritime power is based on geographic and economic factors, then US, Japan, and Russia would hold the top rank. India and China with good geographic and economic assets can be counted as maritime powers. Libya and Panama with large registered mercantile tonnage cannot be considered as maritime powers. At this juncture it is useful to expand the equation to include the military factor. The formula therefore is:

\[ P_{mp} = G + E + M \]

\[ ^{69} \text{Ibid., p.53.} \]
Perceptions of military strength are highly subjective. However, a weighting system has to take into account both the nuclear and the conventional component of the fighting instrument. The perceived maritime power of a nation is enhanced if it possesses nuclear weapon capable naval forces that can act as a deterrent. It is safe to assign a higher maritime power weight to United States, Russia, UK, France and China based on their SSBN/SSN/ships/aircraft capable of delivering nuclear weapons. Similarly, it is possible to estimate conventional naval power based on manpower figures, number of combatants, and range of weapons. However, the intangibles of military power such as troop skill and morale, quality of military leadership, coherence of military strategies, flexibility, mobility and outreach of forces and even political morale cannot be discounted. By applying a series of conversion factors or coefficients to these factors, estimated military power can be compared internationally.\textsuperscript{70}

Changes in technology too have had a major impact on matters maritime. The advent of computers, space based reconnaissance, digital communications and information technology have been instrumental in changing the nature of maritime intercourse. Almost all the elements of maritime power have been influenced by technology. Besides, the networking of knowledge is leading to a new technology in computational field. Informatics has telescoped the rate of obsolescence. The 1990-91 Gulf War provided a glimpse of high technology in maritime affairs. Therefore, the formula needs to be readjusted to read as:

\[ P_{mp} = (G + E + M + T) \]

The two critical intangible factors in the assessment of maritime power are national maritime strategy and the strength of national will or maritimeness. These

\textsuperscript{70} Ibid., pp.125-129.
are part of the political factors that are involved. National will is the foundation on which national strategy is formulated and carried through to success.\textsuperscript{71} The equation therefore now reads as follows:

\[ P_{mp} = (G+E+M+T)(S+W) \]

The 'S' factor comprises a clear cut strategic maritime doctrine with plans to exercise maritime power and aggrandizement of influence and strategic maritime culture.\textsuperscript{72} The 'W' factor is based on national leadership and the relevance of maritime strategy to national interests. This factor needs to be qualified by adding the tradition of earlier success in maritime expeditions.

The above calculations provide an analysis of perceived maritime power. Many factors included in the equation are subjective and have to be dealt with using numerical coefficients based on the viewpoint of decision makers.

\textbf{EMPLOYMENT OF MARITIME POWER}

Throughout history states have employed maritime power to safeguard their national interests. The navy has been the primary strategic arm for projecting power across the oceans and safeguarding offshore and distant territories. This is so because it is only the naval forces that enjoy flexibility, mobility and visibility. The navies are flexible forces and can be deployed or withdrawn in short periods unlike the land forces. They take pride in their right of free passage. These attributes are unique in nature, primarily due to the medium in which the navies operate.

Further, the shape, size and war fighting capabilities of a maritime force are important determinants for use as instruments of foreign policy. Importantly,

\textsuperscript{71} Ibid., p.143.
\textsuperscript{72} Ibid., p.145.
maritime and naval diplomacy is a term that has found an important place in the lexicon of theory and practice of international relations. In the recent past, Britain and the US have exhibited their ability to employ their respective maritime power in support of national objectives as also in support of United Nation authorised maritime operations.

The Falkland War 1982

The Falklands group of islands, located some 7000 nautical miles from home, is a British Colony in South Atlantic. It comprises the Falkland Islands and South Georgia. In 1883, Britain occupied these islands from Argentina and established a garrison. Argentina's continuing claims to sovereignty encouraged Buenos Aires to seize the islands in April 1982. The British responded by dispatching a large task force to recapture the islands. A series of sea, air and land battles took place, resulting in the final surrender by Argentina to Britain.

An examination of the Falkland conflict highlights how Britain was able to harness its maritime power and bring it to bear on Argentina. The campaign highlighted the importance of national resources and styles of government in determining the character of maritime power, and of influencing the way it is employed in war. This was in sharp contrast to Argentina, which despite all the advantages and superiority in terms of geography and military, failed to take advantage of the situation, and lost the war.

For Britain, the biggest impediment was geography. As noted earlier, the islands are located 7000 nautical miles from home, and are most inhospitable. It was a long voyage for the British task force to reach the area of operation. The passage was not free from problems in terms of both material failure and human

73 Till, op.cit., p.244.
fatigue. However, the British colonies at St Helena, Ascension and Tristan da Cunha in South Atlantic were invaluable.

The Ascension Island is also the main base for the Royal Air force operations. It is located 3700 nautical miles from Britain. The force exercised, recouped and undertook maintenance of its forces before heading for the Falklands. Besides, Wideawake airfield in the Ascension Island served as an important staging post for British Vulcans, Nimrods and Hercules aircraft. This 10,000 feet runway had earlier been a staging post for the British during World War II.\textsuperscript{74} Though such distant territories serve as assets and augment distant operations, they can also be a source of weakness. These need to be militarily equipped to deter an opponent from attacking. Further, maritime geography also did much to determine the character of conflict. Had the islands been 150 miles nearer to Argentina, or further away, the nature of conflict would have been very different.\textsuperscript{75}

The British task force comprised carriers, destroyers, frigates and Royal Fleet Auxiliaries. The British flagged merchant fleet was augmented to support the task force through its long voyage to the Falklands. These included three passenger liners, fifteen oil tankers, four passenger cargo ships and several general cargo ships, offshore support vessels, tugs and trawlers. Some of these were provided with helicopter landing facilities, replenishment at sea equipment, military communication facilities, satellite navigation and satellite communication equipment. These ships were refitted, repaired and retrofitted to meet the requirements of the taskforce. At the end of the conflict, Jim Slater, leader of the

\textsuperscript{74} Ibid.
\textsuperscript{75} Ibid.
Seamen's Union, summed up the situation quite concisely, “Quite simply, if it was not for the backup provided by the merchant navy, the Royal Navy vessels might as well have stayed in port”. The contribution made by the maritime community was well demonstrated. The shipyards and the dockyards played an all-important role. Their ability to convert a large number of vessels for military deployment was indeed noteworthy. That several vessels had to be fitted with helicopter landing decks, fuelling stations and special cargo spaces without much notice was a reflection of the importance of maritime infrastructure. The maritime community worked hard to deliver these vessels on time. Further, some 330 officers and 1170 men of the merchant navy manned these vessels. The Falklands campaign demonstrated that the maritime community was an important component of maritime power.

Turning to an examination of the fighting instruments of maritime power, both the Royal Navy and the Armada Republic Argentina were fairly modern, well-trained and balanced forces. Both sides had carriers, destroyer and submarines. Both the navies were armed with Exocet missiles. Captain Jeremy Black of HMS Invincible is said to have remarked “Exocet versus Exocet. Hmm, that is not nice”. Incidentally, the Argentine naval crew had been trained in Britain and had even carried out practice missile firings at the British firing range. As a prelude to the Falklands Operation, the Argentine navy had exercised with the Uruguay navy and was a well-trained force. In addition, the Royal Navy had other commitments. The British fleet had been tailored to NATO requirements and was

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76 Ibid., p.245.
77 Ibid.
78 Ibid.
essentially equipped for antisubmarine warfare role. Despite these weaknesses and geographical difficulties, the Royal Navy got the better of the Armada Republic Argentina.

Gulf War 1990-91

The Gulf War 1990-91 once again showcased the ability of states to exercise maritime power to achieve a decisive victory. After the Iraqi military crossed over into neighbouring Kuwait in August 1990, the United States, along with a 32-nation coalition force, stemmed the misadventure. Iraqi military ambitions were challenged and ultimately subdued.

Accounts of the Gulf War 1990-91 have lauded the relevance of land-based air power. The 38-day aerial campaign rapidly gained air supremacy and seriously degraded Iraqi command, control and communications, thus facilitating the other objectives of the air campaign and greatly assisting the land offensive. The contribution made by the maritime forces of the coalition is also noteworthy. The flexibility, mobility and lethality of maritime power were suitably exhibited during Desert Shield / Desert Storm. Maritime superiority enabled multinational forces to implement and sustain UN sanctions against Iraq.

The aim of the initial coalition deployment of military forces in response to the Iraqi invasion of Kuwait was to contain the conflict and particularly prevent a further advance into Saudi Arabia and hence keep free the ports and air bases needed for subsequent reinforcements. The buildup began with the deployment of two carriers task groups (USS Eisenhower and Independence) into the area. These were stationed so as to strike Iraqi targets. This was followed by the deployment of

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80 Ibid., p.111.
four additional carrier battle groups, a 31-ship amphibious task force under the command ship, \textit{USS Blue Ridge}, and several other combatants and support ships. The first combat aircraft on the scene were the air wings of the \textit{USS Eisenhower} and \textit{USS Independence}. Additional land-based fixed wing aircraft began arriving shortly afterwards.

Desert Shield / Desert Storm validated the fact that, for sustained distant combat operations, large stocks of equipment and ordnance must be transported by sea. The importance of mercantile marine/special ships is a pre-requisite for a decisive victory. The first Maritime Pre-positioning Ships, with ordnance for the US Marine Corps, arrived seven days after the deployment order. Two Afloat Pre-position Force ships carrying US Air Force equipment followed, and ordnance arrived ten days after the deployment order. Strategic sealift from Diego Garcia and Guam was therefore crucial to operations in the Gulf. Afloat Preposition Ships, Maritime Pre-positioning Ships, Fast Sea Lift Ship and Rapid Reserve Force augmented the main force through a rapid buildup of men and material. Similarly, two US hospital ships were on station and ready in the Persian Gulf within about sixteen days of deployment order. This was perhaps the largest and fastest sea lift operation with more than 240 ships carrying 18.3 billion pounds of equipment and supplies to sustain Desert Shield / Desert Storm.\(^8\)

The naval reservists played an important rôle. The call up of reservists in support of the operations was probably the largest since Vietnam War. Twenty one thousand naval reserves joined active duty units. They made significant contributions in medical, cargo handling, mine warfare, naval control of shipping

\(^8\) For more details see “US Navy in Desert Shield/Desert Storm”, at website of \textit{Department of the Navy: Naval Historical Center} at \url{http://www.History.navy.mil/wars/dstorm}. 
and several other duties. Admiral James E. Taylor, USN, Director of Naval Reserves noted that the reservists were motivated and well trained.\textsuperscript{82}

On January 17, 1991, Desert Storm unleashed its fury by a barrage of \textit{Tomahawk} Land Attack Missiles (TLAMS). In all, 288 TLAMS were fired from cruisers, destroyers, battleships and submarines with a success rate of over 85%. It was a testimony to the uses of advanced technology and constituted a revolution in the art of war. \textit{E2C Hawk Eye} operations kept track of Iraqi aircraft and coordinated reconnaissance and combat air patrols. The Unarmed Ariel Vehicles and Remotely Piloted Vehicles were another success story. “Smart” weapons and laser-guided bombs used in the war introduced a new age of weaponry. While these weapons proved to be successful, the C4I systems proved that future maritime warfare would be technology intensive. The strategic advantage of high technology was amply demonstrated.

Another aspect of the campaign was jointmanship. The success of cooperation and coordination in joint operations confirmed its importance and relevance for the US military and coalition partners. Desert Shield / Desert Storm highlighted the need for synergistically developed combat capabilities. The entire operation was unprecedented in scope, complexity and speed. It underscored the fact that maritime power is an ever-expanding concept. It is no longer restricted to the navy or the maritime components only.

\textbf{CONCLUSION}

This chapter has dealt with the concept of maritime power in the US, Britain and Russia and emerging maritime powers like China and India. It is

\textsuperscript{82} Ibid.
evident from the above discussion that the concept of maritime power has a strong element of continuity. Mahan would have little difficulty in understanding and advocating solutions, which would be unlikely to differ fundamentally from those which are current today – whether among major or emerging maritime powers. Perhaps for the previous generation of maritime strategists, UNCLOS III, which has created a new nautical regime (EEZ), and changes in warfare brought about by the RMA would be incomprehensible.

Though Mahan had a broader view of sea power, at that time the dominant view restricted maritime interests primarily to sea-borne trade, fishing limited to coastal waters and a navy to protect maritime interests. Today, a state's maritime power encompasses a much broader definition. It includes a state’s dependence on sea, maritime tradition, size of the navy, merchant fleet, shipbuilding capacity, sea borne trade, development level of ports, size of the EEZ, continental shelf, seabed area, marine resources and geographic location with respect to the choke points and waterways, the level of technological development and the capability and the will to exercise maritime power.

Another facet of maritime power is the revolution brought about by the RMA, advances in information technology, digitalization, and globalization of the world economy. Finally, maritime power is a dynamic concept and will experience a constant change with newer elements being added based on change both in technology and interstate relations.