

## **Section II**

### **Terrain Specificity: Oceans and Amplifying Elements**

#### **Chapter 4**

#### **Terrain Specificity and Maritime Dimension**

## SECTION II

## TERRAIN SPECIFICITY: OCEANS AND AMPLIFYING ELEMENTS

*" Who should we propitiate with our oblations,  
 Other than the one, whose majesty is manifested,  
 By the snow clad mountains, by the mighty ocean, the reservoir of rivers,  
 Whose arms are the directions, whose splendour is reflected,  
 By the skies, the earth, the clouds?*

*-- The Rig Veda<sup>1</sup> (X, 121, 4-5)*

The ancient verse of the *Rig Veda* chants the hymn of diversity of the world as understood in the Vedic Age. It is in this diversity and in its own accumulation of chaos, the humans today have to find security. These are the terrains of operation perceived in the wisdom of ancient India. This perception continues today.

The concept of "terrain specificity," with respect to the oceans is examined in this section. The idea of terrain is examined first, and its applicability to the oceans is contemplated thereafter. It is important for strategic assessment. Developing a strategy without understanding the area of operation can cause difficulty in its appreciation. The area of operation can be understood well in a terrain specific format. Sea based thinking is the basis of revolution in military affairs (RMA).<sup>2</sup> The needed revolution that has to occur in our military affairs is the shift from land-based to sea-based thinking.<sup>3</sup>

## CHAPTER 4

### TERRAIN SPECIFICITY AND MARITIME DIMENSION

#### Perception of Terrain

Chapter X of Sun Tzu's *Art of War* deals with positioning during confrontation.<sup>4</sup> While translations of the classic by different authors chose to title each chapter separately, this chapter remained identical for most of them. Griffith (1963), Giles (1910), Cheng Lin (1969),<sup>5</sup> Clavel (1998)<sup>6</sup>, titled it "Terrain." According to Sun Tzu, terrain is one of the four elements of detailed planning in strategy; the others are the enemy, the self, and the weather. "*Know the enemy, know yourself, and your victory will not be threatened. Know the terrain, know the weather, and your victory will be complete.*" Sun Tzu stated in his principles of detailed planning<sup>7</sup>. In this statement, terrain is the "immutable entity" and real, others are unpredictable variables and with abstractionism sprinkled in judgment and understanding. By terrain, Sun Tzu meant the "area" of military operations including the following factors: -

- (a) Whether the ground for operation is easy or difficult.
- (b) Whether the ground is open or constricted.
- (c) The distances from the camping site to and from the battlefield.
- (d) The degree of danger posed by the terrain.
- (e) The scope for operation and manoeuvres
- (f) The possibilities for attacks and withdrawals.

Sun Tzu has used "terrain" and "ground" differently. In terrain, Sun Tzu meant the characteristics of a ground.<sup>8</sup> Here lies the deviation. A terrain need not be the ground alone. Ground during his time was the medium on which the terrain existed. The terrain is fixed once the operation begins. It basically aims at talking about the constraints that falls within the concept of "terrain advantage." Once the decision is locked on to a particular terrain, it will have to face the consequences the terrain offers and also facilitate the support the terrain provides.

It can be summarised as the quantum of "terrain advantage," for decision-making. It can also be construed that decisions are complementary to terrain advantage and capable of manoeuvring within its stable dominion. This argument makes all realms of operations as potential terrains for manoeuvres. The terrain therefore has a majority constant characterisation like in any system with a boundary. It need not be strictly geographical.

### **Meaning of Terrain**

Terrain means ground, a tract, regarded as a field of view for operations, or as having some sort of unity or prevailing character according to dictionary. The word terrain came from Latin *terrenus--tera*, means earth, natural features and configuration of land, its topography. Terrain is also a region characterised by common ownership or geographical features. It is an area, field, realm, province, territory, or domain. The meanings are many, but all of them underscore the term as an expanse, geographical or otherwise, important for competitive operations.

### **Terrain and Warfare: Inquiry into a Definition**

Principles of terrain originated from warfare. Since the 19<sup>th</sup> century, nature of war changed tremendously. Proliferation of scientific and technological inventions changed it and added new dimensions to the way battles were fought. New categories: air and space warfare, and guerilla warfare, were added to the already existing traditional classifications of sea and continental warfares.<sup>9</sup> The basic tenets of all types of warfare are identical. One of the identifiable commonalities is their terrain specificity. From the very beginning, land warfare depended upon topographical elements for tactics and strategy. Besides Sun Tzu in his *Art of War*, this concept was highlighted by Kautilya in *Artha Sasthra*, and Clausewitz in *On War*, among other strategists of the world. Land warfare is fought neither in a vacuum nor on a uniformly checkered board. Instead, it unfolds over concrete terrain, including roads, passages, elevated ground, cover and obstacles of every kind. Victory goes to those who best understands and utilises the terrain.<sup>10</sup>

Understanding the terrain is a decisive factor in an operation. This factor, though very ancient, is applicable even today. Terrain incongruent decision-making can upset the object of an operation. There are many. Bay of Pigs in Cuba, Vietnam, Iranian hostage crisis, Indian Peace Keeping Forces in Sri Lanka, execution of the Afghan leader Abdul Haq by Taliban in October 2001,<sup>11</sup> and various naval blunders are examples. Terrain specificity, therefore, is important. The terrain can be defined against the background of national security as **“a domain, geographical or otherwise that has the capability to define national power by influencing an**

element of national security.” From the definition, the characteristics of terrain can be identified:

- (a) It should be a system entity of expanse, geographically or otherwise, and with a distinguishing character that separates it from other terrains.
- (b) It is complementary and has the connectivity with other terrains from the point of view of national power and thereby national security.
- (c) It should be strategically and tactically important for “manoeuvres.”
- (d) It should be directly involved with the strategic interests of a nation.
- (g) It should have the potential for “threat attraction” and therefore conflicts.
- (h) It is a realm that can be opened and closed at will.

Terrain is fundamentally associated with tactics and strategy in achievement of a goal. In this parlance every realm of operation becomes a terrain. At macro-level humans operate on the geographical realms of land, air, space, and ocean today. They become the terrains of operation that are not limited to warfare alone. They encompass all activities of human survival. Therefore, they are to be governed by the terrain principle. They are not identical, though mutually inclusive.

## **Land**

Land remains the primary terrain, though it occupies a small part of the globe. The importance of land comes from the single fact that humans can survive only over

it. All the activities of humans are from this platform of operation. It therefore becomes the primary terrain for survival.

### **Airspace**

Since the time the Wright Brothers created a vehicle heavier than air but can levitate and move through it, the air space never remained the same. Invention of a flying machine that is heavier than air was an incident in the process of accelerating the rate of change. Air became an element of national power. Airplanes and air warfare, commercial transportation, and all other activities changed the world. Airspace has its own threats from the point of national security. The act of terrorism on September 11, 2001, when the airspace over Manhattan, and Washington, D.C., in the U.S. were successfully utilised by the perpetrators of suicidal attacks was an example of human reach within the domain of threat perception.<sup>12</sup> For the terrorists it was a matter of "knowing" the terrain: the airspace.

Airspace also governs other factors related to national security elements. For these reasons, and identifying other realms of operation for the humans towards national security, airspace is considered a terrain and therefore required to be treated that way. In aerial warfare the control of airspace is essential to control land. In a situation of war there is a need to destroy the airpower of the enemy. A terrain, therefore, is complementary to another. Airspace can also be closed or brought under regulations, as in Iraq after the Gulf War or in the U.S. in the aftermath of the terrorists raid on September 11, 2001.

## **Outer Space**

Outer space is a frontier for the humans. It borders airspace into infinitude at the current level of human erudition. Space is an important component of the international world.<sup>13</sup> The United States considers that in the 21<sup>st</sup> century, space systems will be the nexus among economic, diplomatic, and military elements of national power.<sup>14</sup> Therefore, it is a terrain by itself. Efforts are there to control this medium by various nations who are developing the capability for it.

## **Oceans**

From the understanding that land, air, and space, the three geographical entities can be seen as terrains of operation, the fourth geographical element, the oceans, hypothetically is concluded a terrain. From this aspect the expanse of oceans and the maritime dimension are examined in detail.

## **Understanding the Maritime Dimension**

This chapter's primary objective is to understand the terrain specificity of the oceans and the maritime dimension. To understand its importance, witness in antiquity Greece against powerful empires from Asia; England against Napoleon in the 19<sup>th</sup> century; the United States and its allies fringing the sea against the Soviets and Red Chinese empires in Eurasia, and other gargoyles of maritime history of the world. For the United States the Second World War started and ended with a fleet.<sup>15</sup>

Increase in effectiveness of strength based at sea applies to almost every new development in the world. Sea power has decided all world wars so far. The total power of a nation or coalition as in the world wars can only be projected by sea. Sealift is the carrying concept of strength at sea. Oceans have profound influence on every maritime nation of the world in military and geostrategic spheres alone. There are 163 navies in the world including the NATO that is considered a separate entity in terms of power.<sup>16</sup> National dependence on the seas is not a unique phenomenon; it is historic in concept and idea.

### **The Maritime World**

Humans were virtually confined to land in the tropical and temperate climates for many years. Oceans were at a very low level around 20,000 BC. People could walk across today's continents, as they were one stretch of vastness.<sup>17</sup> Today's busy seaports were then dry lands far from the open sea. People who lived near Shanghai, Calcutta, Singapore, and Sydney never saw the sea.<sup>18</sup> But a remarkable change began around 15,000 BC when the summer and winter became warmer. Ice around the world melted rapidly between 12,000 BC and 9,000 BC. People saw the level persistently rising but did not know the reason. It was not cyclic rising and retreating. It flooded the low-lying areas. Rivers changed courses. The rising was almost complete by 8,000 BC. The temperatures immediately were higher than they are today.<sup>19</sup> The sea rose by 140 metres. This was the most extraordinary event in human history, according to historian Geoffrey Bellaney, during the last 1,00,000 years—far

more influential than all the combined events of the 20<sup>th</sup> century.<sup>20</sup> The rising seas, in ways that always cannot be traced, transformed human life forever.

The seas caused a peculiar phenomenon: proximity and isolation--the powerful determinants of history.<sup>21</sup> Today oceans cover 360 million square kilometers, about 71% of the Earth's surface. The land adjoining the oceans has a total coastline of 5,04,000 kilometres.<sup>22</sup> Though it appears to divide the nations, the sea, in fact unites them geographically. It binds the continents. It is a medium that humans have ventured out for centuries to discover, to conquer, to trade, and to harvest. The average depth of the ocean is four kilometers. It is a common challenge. Those who traversed it depended on each other, helped, and developed special bonds.

### **Ocean Contents<sup>23</sup>**

The contents of oceans of the world are yet to be calculated accurately. It is expected to contain,

- (a) 328 million cubic miles of water,
- (b) 58 species of sea grasses,
- (c) less than 1,000 species of cephalopods: squids, octopi, and nautilus,
- (d) 1,500 species of brown algae,
- (e) 1,000 species of sea anemones,
- (f) 7,000 species of echinoderms: starfishes, sea urchins, sea cucumbers, and sea lilies,

- (g) 13,000 species of fishes,
- (h) 50,000 species of molluscs,
- (i) oil,
- (j) gas,
- (k) metals, and
- (l) minerals

### **Ocean Facts<sup>24</sup>**

The facts about the oceans are yet another way of understanding them.

- (a) Global fish production exceeds that of cattle, sheep, poultry, or eggs, and is the biggest source of wild or domestic protein in the world.
- (b) Two-thirds of the phyla, the major grouping below the kingdom level is predominantly marine.
- (c) 85% of fish landings in 1985 were marine.
- (d) 15 of the worlds 17 largest fisheries are over fished or in trouble.
- (e) Less than 30 of the coral reefs in Japan, Philippines, and Costa Rica are in good or excellent condition.
- (f) The Great Auk, Steller's Sea Cow, Panamanian Fire Coral, San Diego Mud Snail and Eelgrass Limpet are now extinct.

### **Ocean Components of National Security: Ocean Property**

From the point of view of elements of national security, following oceanic components are identified as the factors that historically contribute to the development of the regions around the oceans: -

- (a) Ocean resources
- (b) Terrain advantage
- (c) Ocean environment
- (d) Islands in the ocean

Threats to these components interplay with the national security concept. Oceans are considered a vital entity today. It was with this purpose the United Nations declared the Year 1998 as the "International Year of the Ocean." Oceans will remain critical for national security of maritime nations.

### **Multidimensionality of the Ocean Terrain**

Ocean, by itself, is a unique terrain. It is multidimensional. It has the surface, the ocean layer, interfacial zones with air and land, and finally the depth, the large abyss of treasure. The wealth and stealth are the key factors. Stealth is greatly advantageous for military security from the time of the submarines. The submarine is a weapon by itself to counter asymmetric threats. It proved its worth as for the classical *guerre de course*.<sup>25</sup> Submarines can penetrate deep littoral waters immune to

nuclear, biological, and chemical warfare, if well equipped with countermeasures to face the threats of attack submarines and mines. They can provide an efficient platform for nuclear attack on the second strike mode for balance of power in a nuclear scenario, and force the world to resort to conventional warfare. Submarines are unique combination of mobility, stealth, endurance, and versatility for offensive operations. Surface and air forces are more vulnerable than submarines. Ocean is the only geographical terrain that provides this advantage.

### **Terrains of the Future**

Examination of terrain specificity was primarily to probe into the conception of ocean as a terrain in this research study. In the course of this study it has been evident that a terrain for operation to heighten national security need not be geographical alone. The study will be inconclusive if this evolving fact is not stated. The terrain could also be a nongeographical domain. Strategists may identify more terrains in the future. It is the innermost aspect of the changing world. An example of an emerging nongeographical terrain is "**cyberspace**." According to James Adams, computers are the weapons and the frontlines are everywhere.<sup>26</sup> It is an evolving concept. It is an expanse where the world today has potential activities related to both offensive and defensive capabilities. It can also become the focus of nations waging wars.<sup>27</sup> Another potential terrain, as specified before in the element of information security, could be the **human mind** itself.<sup>28</sup> It will also not be faraway when humans in search of the secrets of life get entangled within the complicated terrain of **genome** signatures and genome security.

## Terrain Specificity Application

The concept of terrain specificity examined here is against the contemporary beliefs, but in the sphere of influence and application for decision-making and operational execution for national security. What is identified as a terrain is a constant entity that has the characteristics of continuity and interconnectivity though undulated. These domains need not be always geographical, but are domains of specific nature on which the operations sustain. These are land, air, space, outer space, and the ocean, and emerging nongeographical entities like cyberspace, genome, and human mind. Any programme for upgrading national security standards will have to go through all these terrains jointly or independently in today's world.

The ocean, among them is distinctive with its multi-characteristic influence on human affairs. This distinctive character of the oceans from the standpoint of maritime security is examined further in this research.

## NOTES

<sup>1</sup> *The Rig Veda*, X, 121, 4-5.

<sup>2</sup> P. N. Chaudhary, and W. Selvamurthy, (eds.), *Battle Scene in Year 2020*, New Delhi: Defence Institute of Psychological Research, pp. 43-45.

<sup>3</sup> *Ibid.*

<sup>4</sup> R. L. Wing, *The Art of Strategy*, New York: Doubleday, 1988, p. 125.

<sup>5</sup> Chow-Hou Wee, Khai-Sheang Lee, and Bambang Walujo Hidajat, *Sun Tzu: War and Management—Applications to Strategic Management and Thinking*, Singapore: Addison-Wesley Publishing Company, 1996, p. 297.

<sup>6</sup> James Clavel, (ed.), *The Art of War by Sun Tzu*, New York: Delta, 1988, p. 50.

<sup>7</sup> n. 5, p. 16.

<sup>8</sup> *Ibid.*, p. 24.

<sup>9</sup> *Ibid.*, p. 272.

<sup>10</sup> Encyclopaedia Britannica 2001, CD-ROM.

<sup>11</sup> Chidanand Rajghatta, How Abdul Haq Met His Doom, *The Times of India, New Delhi*, October 28, 2001:1.

<sup>12</sup> In this attack, terrorists crashed their hijacked aeroplanes against the World Trade Centre in New York, and the Pentagon in Washington, D.C., causing heavy casualties and spreading terror.

<sup>13</sup> Institute for National Strategic Studies, *Strategic Assessment 1999*, National Defense University, Washington, D.C., 1999, pp. 301-8.

<sup>14</sup> *Ibid.*, p. 301.

<sup>15</sup> S.E. Smith, *The United States Navy in World War II*, New York: Ballantine Books, 1967, p. xix.

<sup>16</sup> According to the total entries in the *Jane's Fighting Ships 1999-2000*.

<sup>17</sup> Geoffrey Blainey, *A Short History of the World*, New Delhi: Penguin Books, 2000, p. 24.

<sup>18</sup> *Ibid.*, p. 25.

<sup>19</sup> *Ibid.*, p. 30.

<sup>20</sup> *Ibid.*, p. 31.

<sup>21</sup> *Ibid.*, pp. 41-3.

<sup>22</sup> Discovery Channel, TV Quiz.

<sup>23</sup> Compiled from Internet, FAO, and Coast Guard sources.

<sup>24</sup> *Ibid.*

<sup>25</sup> Montgomery C. Meigs, *Slide Rules and Submarines*, Washington, DC: National Defense University Press, 1990, p. 3.

<sup>26</sup> Adams, James, *The Next World War*, London: Arrow Books, 1998, pp. 1-8.

<sup>27</sup> *Ibid.*, p. 305.

<sup>28</sup> See Chapter 3, p. 106, Information Security.