

**GEOSTRATEGIC IMPERATIVES IN INDIA'S NORTHERN
SECTOR: A CRITICAL ASSESSMENT OF
TRANSPORT AND COMMUNICATIONS**

*Dissertation submitted to the Jawaharlal Nehru University
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MASTER OF PHILOSOPHY

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Certified that the dissertation entitled “**GEOSTRATEGIC IMPERATIVES IN INDIA’S NORTHERN SECTOR : A CRITICAL ASSESSMENT OF TRANSPORT AND COMMUNICATIONS**”, Submitted by **JUPAKA MADHAVI** is in partial fulfillment of the requirements for the Award of the degree of **MASTER OF PHILOSOPHY**. This dissertation has not been previously submitted for any other degree of this or has any other university and is her own work.

This may be placed before the examiners for the evaluation for the award of the degree of Master of Philosophy.


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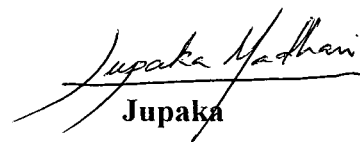
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CONTENTS

S.No.	CHAPTERS	PARTICULARS	PAGES
1.	CHAPTER I	GEOGRAPHICAL BACKGROUND OF INDIA'S NORTHERN SECTOR.	1-33
2.	CHAPTER II	GEOSTRATEGIC IMPERATIVES: BACKGROUND OF THE STRATEGIC REALITY	34-54
3.	CHAPTER III	TRANSPORT AND COMMUNICATIONS DIMENSION	55-74
4.	Chapter IV	FOREIGN POLICY MEASURES : THE EXTERNAL DIMENSION	75-100
5.	Chapter V	NEW HORIZONS OF SCIENCE AND TECHNOLOGY AND THE CHANGING GEOSTRATEGIC PARAMETERS.	101-117
6.	CHAPTER VI	CONCLUSION	118-123
7.	BIBLIOGRAPHY		124-136

LIST OF MAPS

S.NO.	MAP NO.	MAP AGENDA
1.	1.1	Study Area (India's Northern Sector)
2.	1.2	Geography of India's Northern Sector
3.	1.3	Strategic Location of Delhi
4.	2.1	Aryan Consolidation of India
5.	2.2	Asoka's Consolidation of India
6.	2.3	Consolidation of India Under Mughal Empire
7.	2.4	The Advent of Alexander: Inroads into India
8.	2.5	Chinese In Roads (British Traveller's Route Maps)
9.	3.1	India Rail Network
10.	3.2	India's Road Network
11.	3.3	The Golden Quadrilateral (NHDP)
12.	3.4	Geostrategic Location of NH1-A
13.	3.5	Domestic Network of Indian Airlines
14.	3.6	International Network of Indian Airlines
15.	4.1	Transport Linkages of China
16.	4.2	Transport Linkages of Myanmar
17.	4.3	Transport Linkages of Pakistan
18.	4.4	Transport Linkages of Nepal
19.	4.5	Transport Linkages of Bhutan
20.	4.6	Transport Linkages of Bangladesh
21.	5.1	Industrial Potential of Northeast India

CHAPTER I

GEOGRAPHICAL BACKGROUND OF INDIA'S NORTHERN SECTOR

The Republic of India formed on 15th August 1947 is a peninsular country with a sub-continental size of 3,287,263 square km land area, extending between latitudes 8°24'47" and 37°17'53" north and longitudes 68°7'53" and 97°24'47" east, India commands a geostrategic position in South Asia with six neighboring countries with whom it has land boundaries, in the north namely: Islami Jamuria-e-Pakistan, in the west, Peoples Republic of China, in the north and north east, Nepal Adhirajya, Kingdom Of Bhutan, in the north, Myanmar Naigngandaw and Peoples Republic Of Bangladesh in the east.

The peninsular India that protrudes southward is bounded by Arabian Sea off the coast of Gujarat in the west and Bay of Bengal in the east and Indian Ocean in south all of which extends upto 12 nautical miles in the territorial waters in west, south and east direction. For all strategic purposes the 22¹/₂° latitude of 'Tropic of Cancer' is considered here, as the demarcating parallel northward which is **THE NORTHERN SECTOR** (Map 1.1 depicts the study area). 'Tropic of Cancer' incidentally divides India into two equal halves (in north and south) is considered a standard parallel for strategically demarcating the land-ward and northward mass of India from the south Indian peninsular region . Thus 22¹/₂° parallel/ 'Tropic of Cancer' is of

profound geostrategic importance, as it contains a contiguous stretch of 15,168 km long international border with the neighboring countries. With this, the dimension of national security becomes very crucial.

The chief constituent element of India's security policy has been based on the guideline that the defence of nation's strategic and security interests involves long term and short-term appreciation of threat perceptions, challenges and interests. With major wars fought in Kashmir (1947-48) with Pakistan with China in 1962 and 1965 (Kashmir and western borders) in and again with Pakistan in 1999 in Kashmir India's northern frontiers have to be undoubtedly guarded and strategically strengthened such that threat perceptions can be minimized and incursions such as in Rann of Katchhh in (1965), insurgencies in Kashmir, Nagaland, Mizoram, Punjab, Kashmir and Assam can be controlled. The republic of India in total has 28 states and 6 union territories which are administered by the Center and National Capital Territory of Delhi.

The geostrategic zone commences northward onwards Tropic of Cancer, that is $22\frac{1}{2}^{\circ}$ north, has about a eleven complete uncut northward states namely Jammu and Kashmir, Punjab, Haryana, Uttar Pradesh, Uttaranchal, Sikkim, Arunachal Pradesh, Assam, Meghalaya, Manipur and Nagaland and two Union Territories Delhi and Chandigarh . New Delhi being the capital of India is strategically located on the north west of India. The states through which Tropic of Cancer passes in this northern sector are:

Gujarat, Madhya Pradesh, Chattisgarh, Bihar, Jharkhand, Mizoram and West Bengal. Gujarat and West Bengal are sea facing states with Gujarat offshore Arabian sea bordering Pakistan and West Bengal offshore Bay of Bengal bordering with Bangladesh. With this the national security of India naturally implore Army, Airforce and Navy : all the three wings of the defence apparatus of the country.

The Indian states that are included in the study area are states confined to sharing the international borders all of which lying above Tropic Of Cancer. The study area has 17 states of India and 2 Union Territories mentioned as under from west to north west to north and north east of India respectively. (Map 1.1. depicts the study area). They are Jammu and Kashmir, Himachal Pradesh, West Bengal, Gujarat, Bihar, Rajasthan, Assam, Punjab, Meghalaya, Tripura, Mizoram, Nagaland, Sikkim, Manipur, Arunachal Pradesh, Uttaranchal and Uttar Pradesh. The most geo-strategically placed state in this region are Arunachal Pradesh and Sikkim. Arunachal Pradesh is bounded by Bhutan in west, Tibet and China in north and Myanmar in the south . Sikkim is bounded by Bhutan in east, Nepal in west and Tibet and China in the north. This should be considered as red alert area West Bengal is the second most geo-strategically placed state as it is bounded by Nepal in north and Bhutan in north east and Bangladesh in the east. It also opens into a bay named as 'Bay of Bengal' and has Myanmar also in proximity. So it can be said that on one hand it is Arunachal Pradesh state that holds maximum geostrategic importance so as to its land -cum-sea-based state West Bengal

STUDY AREA (INDIA'S NORTHERN SECTOR)



- - - - International Boundary
 State Boundary
 © Capital

(Map not to scale)
 Source: Atlas, Dreamland Publications, New Delhi, 2001

falling red-alert area on the other hand. Mizoram and Jammu and Kashmir rank third in ranking as Mizoram . Mizoram is bounded by Myanmar and Bangladesh on western border. Assam too is bounded by two countries Bhutan and Bangladesh and Kashmir is bounded by Pakistan in the north west and Tibet and China in north and north east followed by Uttaranchal with Nepal and China and the state of Jammu and Kashmir with Pakistan and China. Ranking under high vigilance area is Gujarat, Rajasthan, Punjab, bounded by Pakistan on the west, north north-west and north west side of India. Here Gujarat becomes doubly geostrategic as it has both land as well as sea-borders off-coast being the Arabian Sea. Uttar Pradesh and Bihar on the other hand areas similarly placed on high vigilance's areas as Nepal is a common country sharing its international Border with both of these states. The same goes for Nagaland and Manipur with Myanmar as on the eastern side. Tripura and Meghalaya have a common international boundary with Bangladesh.

From the aspect of territorial expanse, Rajasthan has the largest state area of 3,42,239 sq. km having a very high area. Uttar Pradesh and Jammu and Kashmir are the states having high territorial area of 2,38,566 sq. km and 2,22, 236 sq. km respectively. Gujarat is placed at a medium area of 1,96,024 sq. km. Low category territorial area falls under the states of Bihar, West Bengal, Arunachal Pradesh and Assam with an average of 86,274 sq. km. Very low territorial area of an average of 26,606 sq. km fall under the states

of Uttaranchal, Himachal Pradesh, Punjab, Meghalaya, Manipur, Mizoram, Nagaland, Tripura and Sikkim.

Administratively, the maximum districts are in Uttar Pradesh (70 districts) followed by Bihar and Rajasthan (37 and 32 districts respectively). Gujarat, Assam, West Bengal and Punjab have an average of 22 districts falling in the medium category. Less districts are in states of Jammu and Kashmir, Arunachal Pradesh, Uttar Pradesh, Himachal Pradesh, Manipur, Mizoram and Nagaland of an average 11 districts. Very less districts fall in Meghalaya of 7 districts with Sikkim and Meghalaya having 4 districts each.

(A) GEOMORPHIC DESCRIPTION OF THE NORTHERN SECTOR:

The contiguous northern land frontier of India has a gregarious topography¹ ranging from the macro-region of The Northern Mountains, The Great Plains, The Deccan Plateau and The Coastal Plains.

I) NORTHERN MOUNTAINS:

The Northern Sector of the sub-continent corresponds with the Himalayan zone comprising of Jammu and Kashmir, Himachal Pradesh, northern Uttar Pradesh, Sikkim, northern West Bengal, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya and parts of Assam.

¹ Census of India, Regional Divisions of India - A Cartographic Analysis, Occasional Papers, Series 1, 1988.

The micro regions include:

a) Jammu and Kashmir Himalayas: This region covers the entire state of Jammu and Kashmir and is further divided into Ladakh, Kashmir valley and Jammu containing the highest mountain peak, Mount K₂ of India.

b) Himachal Pradesh Himalayas: This region consists of northern Himachal Pradesh, Trans-Himalayan Zone, central Himachal Pradesh and southern Himachal Pradesh. The pattern of relief ranges in altitude from less than 300 meters to more than 6000 meters above mean sea level. Physiographically, the state consists of an intricate mosaic of mountain ranges, hills, valleys with altitude ranging from 261 meters to 6,791 meters above mean sea level. There is general increase of altitude of from west to east and south to north having exceptions of valleys Kangra, Una, Solan and Sirmaur. From north to south the area can be divided into the zones of:

(i) The Great Himalayan and Zaskar/Northern Zone: This zone covering in north and northeast part of state consists of high mountain peaks capped with snow, glaciers and narrow valleys, is of maximum elevation of the state.

(ii) The Lesser Himalayan/Himadri/Central Zone: This narrow zone has an elevation of 2000-4000 meters and is narrow in width. It lies north of Great Himalayas and consists of Pir Panjal and Dhauladhar ranges.

(iii) *The Outer Himalayan/Siwaliks*: A zone comprising of low hills lies between lesser Himalayas in the north and Punjab plain in the south. Running almost parallel through out the state from north-west to south-easterly direction it is separated by deep gorges and valleys flat and fertile basins. The major valleys/basins² are that of Chandra Bhaga/Chenab valley Ravi basin formed by Ravi River, Beas basin formed by Beas river, Satluj basin formed by Satluj river. Kiardun valley in (Paonta Sahib area of Sirmaur district), Doon valley in Nalagarh area (Solan district), Soan valley (Una district), Kangra valley (Kangra district), Balh valley (Mandi district), Kulhi valley (Kullu district).

The drainage system is massive and shaped by five major rivers flowing in this area namely, Chenab (Chandra Bhaga) Ravi, Beas and Satluj of the Indus system and river Yamuna of along Ganga basin along with their tributaries namely:

- Chenab/Chandra Bhaga river(vedic name: Asikni) is the largest in volume of water, is basically of two streams Chandra and Bhaga having their origin in Greater Himalayan glaciated range flowing on the opposite sides of Bralacha (4900 mts) downward amalgamating at Tandi. It enters the state of Jammu and Kashmir through the north transiting the districts of Lahul and Spiti.

² Census of India, Regional Divisions of India - A Cartographic Analysis, Occasional paper, Series I volume XVII - Punjab, Govt. of India. Registrar General of India's Publication: Sales Dept.

- Ravi river (vedic name in 2000 BC was Pamshni and Iravati, Sanskrit 2000 BC) is a joint stream of Bhadal and Tantgani which is glacial fed and leaves to state in north west.
- Beas (vedic name Arjiriya, Sanskrit Vpasa) river originates near Rohtang Pass (3978 mts) from Pir Panjal range, flows for 256 km and is joined by tributaries of Parbati, Tirthan, Uht, Suketi, Baker, Neogal, Baner, Dehar Gaj and Chakki.

Satluj river originates from Tibet and enters India near Shipki La. It flows in South West direction for 400 kms in Himachal Pradesh and its main northward meeting tributary is Spiti river originating at Kunzam La range, (it flows parallel to Indus river and then cuts right through Zaskar and Great Himalayan Range of the Ganga basin). Yamuna river rises from Yamnotri glacier in Uttar Kashi has a catchment area in the state. Its principal tributary is Tons, Giri and Bata rivers also join Yamuna upstream and downstream respectively making a glacial torrent in Lahul Spiti and joining the Zaskar river.

c) *Uttar Pradesh Himalayas*: This region comprises of a mountainous tract of Himalayan region³ that is highly dissected and rugged. Topographically it may be divided into:

³ Census of India, Series 25, Uttar Pradesh, Census Atlas part IX, Directorate of Census Operation, Uttar Pradesh, Government of India 1999, Registrar General of India's Publication, Sales Depot., New Delhi, 1991.

(i)*Greater Himalayas*: It is the northern most region with permafrost mountain region of an average height of 6000 meters and above. The tectonically volatile area of Uttar Kashi, Chamoli and Pithoragarh lie in this zone. The chief mountain range in this region are Nanda Devi (7817m), Kamet (7756m), Badrinath (7138m) and Trishul (7,120m).

(ii)*The Eastward Kumaon Himalayas/Lesser Himalayas*: It is situated at 3000 meter height and has a width of 80-100 km. These ranges are rising abruptly from the Siwalik and are dotted with interlocking spurs and hill stations such as Mussorie, Nainital, Ranikhet, Almora, Chakrata and Lansdowne.

iii)*Siwaliks*: These are small hills running along the Ganga Plain with a height varying between 300-660 meter. A remarkable feature in this area is that of 'Doon' which is that of 24 km wide valley, some examples are that of Dehra Dun, Kota Dun, Patli Dun, Kothri Dun, Chumbi Dun etcetera.

Again, the drainage in this area is of great expanse and the Ganga river originating from Gangotri glacier control the pattern. The river follows the direction of the slope. Devprayag is the catchment area of river Ganga. The tributaries joining Ganga from the Himalayan region follow complex pattern of draining in a structural trough (parallel to the mountains) and then taking an acute bend to flow in deep traverse gorges. The main tributaries of this river are Yamuna (originating from Yamnotri glacier) Ramganga and Gomti.

- Yamuna river has the tributaries of Chambal, Betwa and Ken. The north east part of the state is covered originating from Nepal and running parallel to Ganga and joining it at Balia. Its main rightward tributaries are Sarda and leftward tributaries are Rapti, Burhi and Gandhak, Son River (originating from G.B. Pant Sagar) is on south east part of Uttar Pradesh.

d)The North East Himalayas: This region exclusively falls in Sikkim, Arunachal Pradesh and Darjeeling section of West Bengal.

The Sikkim Himalayas⁴ fall in the entire state of Sikkim with an elevation of 3,600 meters to 9,100 meters above sea level (the North district having snow capped peaks above 18,000'). Chaibhajan Pass(3450 meters) on Sikkim-Nepal Border. There are two prominent ranges namely Singalia range (offshoot of Greater Himalayan range) and Dangkya range.

The Darjeeling Himalayan region consists of Jalpaiguri and Darjeeling districts. This region rises abruptly from the plains of North Bengal attaining great heights within short distance of the foot hills. This region from north to south. This region consists of Tista plain, central and eastern Dwars, Jalpaiguri district and Darjeeling Himalayas, Kurseong Range, Kalimpong Range, Western Dwars and Mahananda Tract falls in this region. The rivers flowing in this region are Tista, Mahananda, Jaldhaha, Torsa, Raidak and the

⁴ Census of India, Series 22, Sikkim, Census Atlas, Part XI, Directorate of Census' Operations, Sikkim, Government of India Registrar General of India's Publication, Sales Depot. New Delhi, 1991

Sankosh. These are all tributaries of Mahananda river. Arunachal Himalayas consist of Dafla, Abor and Mishmi Hills of an average 3130 meters height.

e) Eastern Hill Zone: This region falls in the states of Nagaland, Manipur, Mizoram, Meghalaya and parts of Assam with rugged steep topography with interspersed ranges and valleys. This hill zone consists of:

(i) Nagaland Hills: The Nagaland Hills⁵ are confined to the entire state of Nagaland. The western side of Nagaland consists of a low hilly range with an altitude between 610 meters and 1,219 meters. Hills in Kohima district run like a spinal column from south-west to north and northeast. On the eastern side, Saramati of 3,826 meters is the highest altitude hill. This region forms the great watershed between Myanmar and the state of Nagaland. Hills are of an altitude of 610 meters-2,438 meters. All rivers flow westward entering Assam and finally join Brahmaputra. Tizu with its Zungli tributary flows into Myanmar joining Chindwin river. The other highest peaks in this region are Japvo mountain (3,014 meters), Kapu mountain (2,841 meters), Paona mountain (2,791 meters), Kapamesu mountain (2,429 meters).

Other ranges in the state of Nagaland include part of Barail range, Wokha range, Sanis range and Bhandari range. The altitude of these ranges vary from 600 meters to 1,800 meters. In the north west part of Nagaland the altitude of hills vary from 100 meters to 2,000 meters with a average height of

⁵ Census of India, Regional Divisions of India - A Cartographic Analysis, Occasional Papers, Series 1, volume XV, Nagaland, Registrar General and Census Commissioner, Government of India, New Delhi, 1988.

1,500 meters (the ranges being in east than on west). Other hills include Tseminyu Hills, Jaluke Medziphema Rolling hills, Chazouba Chizami Hills, Phek Hills, Phokhungri Meturi hills, Workha hills, Zunheboto Hills, Mokokchung hills, Tuensang hills, Champang Phomching Hills, Mon Hills and Singhpham Chiknuyu Rolling Hills. The longest river in this region is Diyung (72 km). Other rivers are Dhansri, Tizu, Dikhu, Jhanji, Zungli, Tejang and Langnyu.

(ii) Arunachal Pradesh Himalayas: This is a part of Eastern Himalayas that stretches over 83,000 sq. kms. The eastern frontier of the Eastern Himalaya culminates into the Arunachal Pradesh Himalayas at the Namcha Barwa Massif on the extreme east of Arunachal Pradesh. The elevation of this range is 5000 meters to 6000 meters. The Kangto Massif also lies in this region in a gigantic S curve running from west south west and east north east between the passes of Tulung La and Keshong La (the Mc Mahon line follows the crest. The southward presence of rain sodden, thickly forested ridges of lesser Himalayas makes access into Assam difficult. The access from Tibet is considerably easy though.

(iii) Manipur Hills and Imphal Valley: Manipur hills have an altitude of 2000 meters and are confined to the state of Manipur.

(iv) Mizoram Hill Zone: Hills in Mizoram are popularly known as Mizo Hills which have several ranges of hills and are covered with dense forests of bamboo and wild banana. The rivers run into dense bamboo forests. The rivers

run into narrow ribbons at the bottom of deep gorges. The north flowing rivers join the Meghna system through Bangladesh. In south, the rivers flow into Myanmar. Villages are located on ridge tops. Aizawl is built on one of the sharpest ridges in India.

(v) Tripura Hills and Plains: Tripura state has no mountains⁶ but there are six major hills ranges. The highest peak is Beltingsib (939 meters) is located on Tripura-Mizoram boundary where other peaks are of 760 meters. These ranges are Jampui, Sakham, Longtharai Atharamura. The hills are situated parallel to each other in north to south direction with the height increasing from west to east, such that of Chittagong hills of Bangladesh. The rivers in this region have their origin from local hills of Juri, Deo, Manu, Dhalai and Khowai ultimately join Kusiara and Barak rivers of the Meghna river system running towards north. Locally, small hills in Tripura are known as 'tilla' and 'nura' are bigger hill ranges. 'Longa' is termed as the valley. The Tripura Plain is situated on west and south of Tripura bounded by the Atharamura range and Sardangmura range, Baramura range and Deotamura range (mainly schools of Pitamura, Jajimura, Tulamura and Champamura hills).

Besides these ridges, there are anticlines namely Gazalia – Mamumbhaga anticline, Sanamura anticline and Agratala dome. The streams passing through Tripura plain are Gomati, Khowai, Howrah Burigang, Fenny,

⁶ Census of India, Regional Divisions of India - A Cartographic Analysis, Occasional Papers, Series I, volume XXI, Tripura, Registrar General and Census Commissioner, Government of India, New Delhi, 1988.

Muhuri and Manugang. The Muhuri Munugang and Fenny flowing towards north and west join Meghna in Bangladesh while the remaining join Padma in Bangladesh. The streams in Tripura are locally known as 'Chhara.'

(vi) Karbi-Anglong and North Chachar Hills and Chachar Plains: Falling in central Assam strip,⁷ this region is a mass of rugged hilly area falling under Shillong plateau. This region is drained by Jamuna and Kopili rivers, the beds of rivers are rocky and gravel laden.

The Chachar plain on the other hand is bordered by Barail range (North Chachar Hills) and Jaintia hills (along eastern and Meghalaya border) Manipur hills and Mizo hills being contiguous to the Bangladesh is west. Chachar plain is created by the headward cutting and subsequent deposition by Barak rivers and its tributaries. this plain is marked with 'tillas' or low-sandstone hill. This is basically a heterogeneous land comprising of high hills, lowlands and level fertile plains.

*(vii) Meghalaya Hills:*⁸ These consist of Khasi, Jaintia hills covering an area of 14,262 sq. km, comprising of gneissic complex granitic rock with centrally placed Shillong plateau. The highest altitudinal point is that of Shillong Peak of 1,693 meters. The next highest peak is that of further Nokrek peak 1,411

⁷ Census of India, Regional Divisions of India - A Cartographic Analysis, Occasional Papers, Series 1, volume III, Assam, Registrar General and Census Commissioner, India, Government of India, New Delhi, 1988.

⁸ Census of India Regional Divisions of India - A Cartographic Analysis, Occasional Papers, Series 1, volume XIV, Meghalaya. Registrar General and Census Commissioner, Government of India, New Delhi, 1988.

meters. The Garo hills on the other hand cover an area of 8084 sq. km. Shillong plateau forms a watershed of a large number of perennial streams viz. Umtre, Umngi, Umiam, Umnngot, Umkhri, Umwaiser, Kynshi, Myntdu, Kopili, Umkareng. These rivers transport a considerable amount of boulders, pebbles and sands in their beds. The Khasi-Jaintia hills with east-west alignment constitute the eastern part of its natural sub-division. The Central part of the Hills form a natural watershed of streams (originating in central highland) and flow in a radial pattern of namely Krishnai, Dudhanai, Simsand, Dareng streams. These rivers cause flood during the rainy season.

II. THE GREAT PLAINS: Stretching from Rajasthan, Punjab, Haryana, Uttar Pradesh, Uttaranchal, West Bengal to the eastern section of Brahmaputra valley, its a vast basin that is densely populated and an extremely fertile plain namely of Punjab plain, Haryana plain. And Rajasthan plain, the upper Middle and Lower Ganga plain and the Brahmaputra valley.

a) Punjab Plain: Punjab plain⁹ can be further sub-divided into the sub-divisions of Ravi-Beas inter-fluv plain, Hoshiarpur-Chandigarh sub-mountain plains, Beas-Satluj Doab and Punjab Malwa plain.

The Ravi-Beas inter-fluv basin (also called Majha plain) is located between the two major rivers westward Ravi and eastward Beas. These rivers have a 2,182.29 sq. km of flood plains forming 25% of the region. The area of

⁹ Census of India, Regional Divisions of India - A Cartographic Analysis, Occasional Paper, Series 1, volume XVII - Punjab Registrar General and Census Commissioner, Government of India, New Delhi-1988

8,625.44 sq. km is flooded by rivers and is called 'Khadar or Bet'. The Ravi-Beas basin is surrounded by Jammu and Kashmir in the north, and shares an international border with Pakistan. The Siwalik hills formed by orogeny are located on the north east part of Punjab and the rest of the plain is of alluvium. This area experiences major water logging due to rise in sub-soil water table. The sub-montane plain of Hoshiarpur consists of fertile soils basically the flood plains of Beas and Satluj (extending an area of 1,040.76 sq.km). This area is marked with seasonal streams /choes and is prone to soil erosion. The entire area of Hoshiarpur-Chandigarh Sub-Montane plain extends upto 6,115.57 sq.km. The Beas – Satluj doab is surrounded by Majha plain and constitutes of the two important rivers of Beas and Satluj and is formed of alluvium and consists of seasonal streams in white Bien and Black Bien.. This is an east to west sloped region. The total area of this region is 5,066.53 sq. km and is a densely populated region. Towards the south of Satluj river lies Ghaggar river and in the east has a sandy infertile tract known as Punjab Malwa plain. The Punjab-Malwa plain extends over an area of 3,0353.81 sq. km and is a flat featureless plain. It contains the prominent rivers of Satluj, Beas and Ghaggar. All these rivers have their flood-plains. The Punjab plain altogether has alluvial soil except that of Siwalik that is composed of tertiary sediments.

b) *The Haryana Plains*: The Haryana plain is bordered¹⁰ by low hills of Siwalik system in north-east which consists of a broad table land. The slope is generally from the north-east to south-west in the direction of which, most of the rivers flow. A large number of rainfed torrents namely Ghaggar, Markenda, Chautang and Saraswati (except river Yamuna), the state is devoid of any perennial river. There are sand dunes of varying heights and magnitude in the western sides of Haryana plain and is commonly known as Bagar. The southern side of Haryana plain consists of Aravalli offshoots sloping towards north and stretches into Haryana for 90 km in south west to north east direction. The elevation here is not higher than 525 meters above sea-level.

c) *Arid Rajasthan Plain*: This area lies east of Aravalli covered by a thick mantle of alluvium. The south east part of this plain¹¹ has thin soil and is highly rocky. The entire arid Rajasthan plain can be divided into Ghaggar plain, Rajasthan Bagar and Extremely Arid Tract and Luni Valley. Ghaggar plain is a sandy plain interspersed with sand dunes and small sand-hills. Most of the sand dunes are stabilized. The relief features are a product of both fluvial and aeolian erosion process.

Extremely Arid Tract is a completely dune free tract of Jaisalmer-Barmer Bikaner covering nearly 65 sq. km. This is a rocky plain carved out of

¹⁰ Census of India 1991, Series 8, Census Atlas, Part XI, Directorate of Census Operations, Haryana, Government of India, Registrar General of India's Publications: Sales Depot, New Delhi, 1999.

¹¹ Census of India, Series 21, Registrar, Census Atlas part IX, Directorate of Census Operations, Rajasthan, Government of India, 1999, Registrar General of India's Publication, Sales Depot, New Delhi, 1991.

jurassic sandstone. A number of playa lakes occur in basins bordered by low scarps. Luni basin is drained by Luni river and covers an area from its sources to that of the confluence of Sukari river meets and delimits the southern boundary of the basin Luni river rises from the Aravalli hills and flows towards the south-west. Luni and its tributaries namely Jijri, Lilri, Guhiya, Sukari, Bandi, Mitri, Jawai, Khari, Sagi etcetra, drain the region falling into Rann of Kachchh. This area is one of the best alluvial plains in very fertile and lies between the foot of Aravalli and Luni river.

d) Upper and Middle Ganga plain : This covers about 75% area of the state. It is situated between the northern Himalayas and southern uplands. The region is the most fertile alluvial soiled and densely populated area of India having a homogeneous regional character. The Upper Ganga plain is basically the northern plain and the Middle Ganga plain is the southern part of Ganga plain and lower the upper and middle Ganga plain fall under Uttar Pradesh's political territory.

(e) Lower Ganga Plain: The Gangetic alluvial plain falling in Bihar and deltaic West Bengal is called lower Ganga plain. Its a part of the Great Indo-Gangetic plain with a monotonously leveled surface. It has a gentle slope from the north-west to south-east. The first section of lower Ganga plain /north Bihar plain¹² extends from Terai region of Indo-Nepal border. It is a riverine

¹² Census of India, Series 5, Census Atlas part IX, Directorate of Census Operations, Bihar (c) Government of India, 1999, Registrar General of India's Publication Sales Depot, New Delhi. 1991.

plain with fertile land and also densely populated. The left bank tributaries of Ganga namely Gandak Burhi-Gandak, Kosi and Mahananda. The second section of lower Ganga plain can be called as South Bihar plains which is a narrow lying plain tapering from west to east. Low isolated hills of Rajgir, Kharagpur and Barabar dissect this plain on its eastern parts.

The Indo-Gangetic plain extends further eastward into West Bengal extending into Barind Tract that has alluvial soils composed of sand, clay and silt (generally brown and black brown). Further extending the Ganga plains falls into Moriband Delta¹³ where streams of Mayurakshi and Dwarka and rivers of Jalangi, Chumi, Bhairah, Ichhamati and Mathabhanga form a drainage network. This tract is full of river beds (deserted channels) which seasonally get inundated and silted. This tract has alluvial soils. Moving further eastwards, the lower Ganga plain further opens up into proper delta. This region is mostly flat and low-lying area. The rivers of Damodar, Barakar, Ajoy flow in the western parts of the region whereas the south-eastern part are drained by Ichhamati, Bidyadhari, Koratoya (Karati) and Atharpanka rivers.

This region is characterized by swamps like that of the salt water lake (Dhapa). The northern is a little raised delta land above the flood level land. The bordering area of the river channels is the highest ground level sloping gradually towards the southeast. Damodar and Hugli rivers form a hydraulic

¹³ Census of India, 1991. West Bengal_Regional Director of India, A Cartographic Analysis, Occasional Papers, Series 1, volume XXIII - West Bengal, Registrar General and Census Commission, Government of India, New Delhi - 1988

interaction in this deltaic region. This region is famous for 'Kana rivers' (one eyed rivers). In this region some of the channels of Damodar had become non-effective due to over-silting and river shifting and as a result become stagnant channels with no outfalls. The delta region is also famous for 'Sunderbans'. The chief characteristics in that of a network of tidal river channels and creeks (Khals) and islands which are mostly swampy morasses covered with low forest and mangroves (scrubwood jungles). As the coast approaches, the land gradually sinks to an elevation that rises hardly above the high water mark and which in turn contributes to half land and half sea like condition fading away into sea. In other words, this can be well described as drowned land that is broken up by swamps and intersected by a thousand river channels. The estuaries located here are the Saptamukhi, Thakuran, Matta, Guasaba and Raimangal. These estuaries are separated and interspersed with large islands such as that of Lothian island, Bulcherry Island, Holiday Island, Dalhousie Island and Bangduni island.

The Rarh plain is a gently sloping land characterized by the undulating upland of the Chota Nagpur plateau influence. The Raj Mahal influence also prevails with ridges as high as 80-100 meters. This region contains the river of Pagla, Bansloi, Brahmani Dwarka, Mayurakshi, and Bakreswar. The north west Rarh plain has an undulating terrain with hills and spurs and ridges. The most prominent peaks in this region are Biharinath (452 meters) and Susunia (440 meters). Dwarakeswar (Dhalkiswar), Silai (Silabati) and the Kasai streams, drain in Bankura at Rupnarayan catchment area formed here by the

joining of Kasai and Kalighai streams. Subanarekha enters in the Rarh plain. The Rarh plain has alluvial plain areas.

(f) The Brahmaputra Valley: This lies in the west, centre and east part in Assam¹⁴ (the Northern sides has the folded ranges of Himalayas and southern sides has Shillong plateau. This valley has Bhabar soils which is gritty and pebbly. It is here that the ephemeral stream arriving torrentially from Bhutan hills disappear by flowing underground to reappear southwards after a few kilometers. The central Brahmaputra is a saucer-shaped plain created mainly by Kopili river and its tributaries. The northern side consists of a foot-hill belt. The east, south and west side is encircled by Shillong plateau. This area is consists of Khaziranga National park (home of one-horned rhino). This eastern Brahmaputra valley is formed by Brahmaputra river and its tributaries of Sibsagar, Dibrugarh and Lakhimpur.

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The catchment area Brahmakunda of Luhit stream, Dibong stream and Dihing (Brahmaputra river) make as very religious spot. Majuli island is also located here which is infact the largest river island in the world. The soil is mostly silt although alluvium with giant and pebbles are found on the fringe of hill borders.

III Deccan Plateau: It is a 1,000 meters high elevated plateau with its north west part touching Rajasthan of having a 500 meter elevation and consists of:

¹⁴ Census of India, Assam, Regional Divisions of India - A Cartographic Analysis, Occasional Paper, Series 1, volume III, Assam, Registrar General and Census Commissioner, Government of India, New Delhi - 1988 ,



*a) Semi-Arid Rajasthan Plain:*¹⁵ This area is marked with intervening valley with red, yellow and mixed red-black soils. The annual rainfall in this area varies from 35-45 cm. The vegetation is semi-arid type partly developed over the Aravalli hills and slopes. This region can be divided into Aravalli range (its associated uplands), semi-arid uplands of east Rajasthan, Banas and Chambal basin. The semi-Arid plain/ Rajasthan bagar, is in the eastern part where older rocks protrude over a sandy surface. There gullying has given rise to conglomerate landscape and the land is undertaking with this film of sand deposited by the south-west winds.

b) Uttar Pradesh Uplands: These uplands¹⁶ are located in the state of Uttar Pradesh which represent a well defined core of Vindhyan system with the average elevation to 500 to 600 meter sloping towards Northern Plains. This consists of Jhansi dry uplands and Mizrapur (wet) uplands. Rugged plateau with north-east slopes . It is a pene-plain with a general altitude of 300 meters.

c) Bihar West Bengal Uplands: These uplands¹⁷ run contiguously towards West Bengal and Bihar totally belonging to the unclassified crystalline rocks. Bihar uplands with an elevation range of 300-900 meters is commonly known a Chota Nagpur Plateau. Red, yellow and red sandy soils are present in this region. This region is marked by Ranchi plateau and Puruliya uplands. The Singhbhum region has red-black soils whereas Puruliya region has sparse

¹⁵ See Census of India 1991, Series 21, Rajasthan, Census Atlas part IX.

¹⁶ See Census of India 1991, Series 25, Census Atlas part IX.

¹⁷ See Census of India 1991, Series 25, Census Atlas part XI.

forest and degenerated soils unlike the Ranchi and Hazaribagh.

IV THE COASTAL PLAINS: This region comprises the entire state of Gujarat chiefly composed of 'Deccan flows' and coastal territory deposits. Drained by Sabarmati and Mahi rivers, this region¹⁸ consists of Gujarat plains, Eastern hilly region and Kathiawar Peninsula. Kachchh Peninsula lying entirely in the Kachchh district is and consisting of sandy plain with isolated rocky hills".

(C) POLITICO-HISTORICAL PORTFOLIO OF THE NORTHERN SECTOR

The oldest border state formed of so far is that of Bihar (1936). The ancient history of Bihar dates back to the vedic age where it was known as 'Magadha' the cradle of the Mauryan emperors. Its capital Pataliputra was ruled by Ashoka the Great, has achieved great name. Bihar also played an important role in the medieval age during the Delhi Sultanate and Mughal period. Bihar was passed into the hands of the *Nawabs* of Bengal as the Mughal era declined. At the famous battle of Buxar in 1764, Bihar became a British territory where it was adjoined as a part of Bengal presidency. Till 1911 when Bihar along with Orissa were separated from Bengal. It was in 1936 when Bihar got separated from Orissa as of today. Again in 15 November 2000, 79,714 sq. km of territory was separated administratively, to form a new state of Jharkhand. Despite being the border of Nepal, Bihar shares a cultural relationship with Nepal.

¹⁸ See Census of India Regional Divisions of India 1990 series I, volume V, Gujarat.

Jammu and Kashmir, was formed in October 26, 1947 shortly after partition of India from Pakistan. It holds epic importance as during the region of Kashmir the fourth Buddhist council was held here. In 1819, Jammu and Kashmir was annexed to the Sikh kingdom. In 1820, Ranjit Singh gave over territory of Jammu to Gulab Singh. In 1846, Kashmir was made over to Gulab Singh under 'Treaty of Amritsar'. In 1947, Oct 26, Maharaja Hari Singh acceded to India under the Indian Independence Act of 1947 after a Pakistani attack. Jammu and Kashmir thus is an integral part of the Indian union and is of extreme geostrategic importance. Jammu and Kashmir is a constant zone of military excursions: in 1947, by Pakistan and in 1962 by China and in 1965 and 1999 by Pakistan .So far out of 4,22,236 sq. km, 78,114 sq. km is under illegal occupation of Pakistan and 5180 km of territory is illegally handed over to China by Pakistan and 37,553 sq. km of territory is under illegal occupation of China.¹⁹

Himachal Pradesh came into being on April 15, 1948 without any controversy.

Tripura, is a Hindu state of great antiquity tracing history²⁰ back to the Mahabharata epic age for over 2000. Having merged with the Indian union in 15 Oct 1949, Tripura served a stint of Union Territory till it became a full fledged state on Jan 21, 1972.

¹⁹ See Census of India 1991, Series 1, volume XVII.

²⁰ Census of India - A Cartographic Analysis, Occasional papers, Series 1, volume XXI, Tripura, Registrar General and Census Commissioner, Government of India. New Delhi ,1988,

Uttar Pradesh, also an epic age state holds a very deep-rooted historic significance from the era of Ramayana-to-Mahabharata to the birth of Buddhism and Jainism. Initially named as United Province of Agra and Oudh, was called as United Province. It served as a prominent trigger state in India's First war of Independence in 1857. In 1950, United Provinces was named as Uttar Pradesh.

West Bengal is the state where the British established their foot-hold here in 1757 at the Battle of Plassey. In 1947 West Bengal was divided into East Bengal/Bangladesh (Muslim dominated) and West Bengal (Hindu dominated) area. In 1954, Chandernagore an erstwhile French possession came under India and West Bengal was re-organized in 1956 in under States Re-organization Act.

The former Rajputana was restructured under the new nomenclature of Rajasthan under State Reorganization Act on Nov. 1, 1956 after independence. Rajasthan has been a part of 'The Indus Valley Civilization'.

Gujarat holds a legendary importance, as it is associated with the legend of Lord Krishna and his mythical city of Dwarka. It was a part and parcel of Bombay Presidency until 1 May 1960. Under the Bombay Re-organisation Act 1960, Bombay Province was divided into states of Gujarat and Maharashtra.

Nagaland was formed in 1 December 1963. It was a former province of NEFA(North East Frontier Agency) and had enjoyed 'Centrally Administered Status' till that of 1955.

In 1849, the English captured Punjab and it was constituted as an autonomous province till 1937. After 1947, under the Indian independence Act, the boundaries were determined under Radcliffe Award and the provinces were divided into East and West Punjab. In November 1, 1956, PEPSU was formed from thus erstwhile states of Patiala and East Punjab States Union (PEPSU). After a decade on Nov. 1 1966, the Punjab state was given recognition to form under Punjab state Reorganization Act, 1966, and the remaining area of 46,620 sq. km was shared between states of Himachal Pradesh and Haryana. The joint capital of Chandigarh was made which is the existing capital of Punjab and Haryana. Chandigarh is a Union Territory.

Assam, historical known as Kamrup and Pragiyotisha initially became a British protectorate at the close of first Burmese War in 1826. In 1839, Assam annexation to Bengal occurred after which in 1874 it was detached from Bengal to from a separate chief commissionership. In 1905 when Bengal got partitioned, Assam was united to the Eastern Districts of Bengal under a Lt.Governor. In 1921, a governorship of Assam was created when the chief commissionership was set forth in 1912. In 1947, Sylhet an entirely Muslim districts was merged with Bangladesh. then in 1951, Dewangiri was ceded to Butan. In 1962, the Naga hill district (administered by the Union Government

since 1957) became a part of Nagaland. In 2 April 1970, the state of Meghalaya attained statehood in 1987 which was earlier within Assam as a Union Territory in 1972.

Sikkim was initially an associate state under the institution of the Chogyal, and succeeded to the Indian Union in 1975.

Not until 1987, Arunachal Pradesh acquired an independent state after a stint of upgradation as a Union Territory. Arunachal Pradesh began with the establishment of British rule by the historic Yandaboo treaty in 1826. In 1914 tribal areas of Darrong and Lakhimpur from Assam province were to form North East Frontier Tracts.

Between 1914 to 1946 the North east Frontier Tract²¹ was further subdivided into:

- (a) Balipara Frontier Tract.
- (b) Lakhimpur Frontier Tract.
- (c) Sadiya Frontier Tract.
- (d) Tirap Frontier Tract.

²¹ See B.L. Sukhwal, India; A Political Geography, Allied Publishers Ltd., New Delhi, 1971.

These Frontier Tracts along with the Naga tribal area was renamed as North East Frontier Agency (NEFA) in 1951. By 1954, the NEFA was reconstituted into:

- (a) Kemeng Frontier Division
- (b) Subansiri Frontier Division
- (c) Lohit Frontier Division
- (d) Tuensang Frontier Division (This division was separated from NEFA in 1957 and merged with the Naga-Hills Tuensang Area that constitutes the present state of Nagaland).

Ultimately in 1987, 20 Feb, Arunachal Pradesh became a complete state of the Indian Union.

In the border region, the most recently constituted state is that of Uttaranchal, which was formed in November 2000. However, the demand for this state under the garb of Uttarakhand began in 1930 from the segments of Uttar Pradesh. The formation of this state has geo-strategically separated Uttar Pradesh from the Sino-Indian borderland.

(D) DEMOGRAPHIC PROFILE OF THE NORTHERN SECTOR: India is the second most populated country in the world with the population of 1,027,015,247 that is 102.70 crores²² according to the 2001 census conducted

²² See Census of India 2001.

in India. The most populated country is infact our neighboring country China of 127.76 crore people as on 1 February 2001. China shares the five international border states of India. The most populated border of India is Uttar Pradesh with a population of 1,66,052,859 people filled by Bihar and West Bengal with high population of 82,878,796 people and 80,221,171 people respectively. The medium populated state is Rajasthan and Gujarat with average population of 50,000,000 Assam and Punjab have low population of 20,000,000. Nagaland, Jammu and Kashmir, Uttaranchal, Himachal Pradesh, Tripura, Manipur, Meghalaya, Arunachal Pradesh, Mizoram and Sikkim have population of 53 lakh people on average.

The most densely populated state is West Bengal followed (904 person/ sq. km) followed by Bihar, Uttar Pradesh, Punjab, Assam, Tripura and Gujarat with an average of 551 persons per km². Rajasthan and Uttar Pradesh have a mean density of 164 persons per km² falling in the high category. Medium densely populated states are Nagaland, Madhya Pradesh, Manipur, and Meghalaya of a mean density of 109 people. Jammu and Kashmir and Sikkim are less dense with 99 people and 76 people per km² respectively. Least densely populated states are Arunachal Pradesh with 13 persons per sq km and Mizoram of 42 persons per sq. km. Overall, with a mean density of 285 persons/km², much can be said regarding the illegal migrants influx vis-à-vis the porous Indian borders.

The average growth rate of population of states along the northern international land border is 25.04%. Nagaland having a phenomenal growth rate of 64.41% followed by Sikkim having 32.98%. Manipur, Meghalaya, Mizoram, Jammu and Kashmir, Bihar, Rajasthan, Arunachal Pradesh and Uttar Pradesh have an average growth rate of 28.36%. Gujarat is a stable state closest to that of national average of 21.34%. The mean growth rate of population is less in Uttaranchal, Punjab, Assam, West Bengal and Himachal Pradesh which is 18.63% . Tripura has a least growth rate of 15.74% in the entire 17 states.

The average sex-ratio of India is 920 females per thousand males to that of 833 females per thousand males of the 17 border states with Manipur having the highest of 978 females per thousand males. Punjab the other hand has the least sex ratio of 793 females per thousand males.

The mean literacy ratio in the 17 states adjoining is 66.41 with maximum literacy ratio in Mizoram of 88.49 and the least in Bihar having 47.53. Comparing it to that of the national average of 65.38, the average border state's literacy ratio is 66.41. It can be said that there is marginal difference vis-à-vis, the national mean literacy ratio.

(E) STRATEGIC LOCATION OF DELHI AND CHANDIGARH

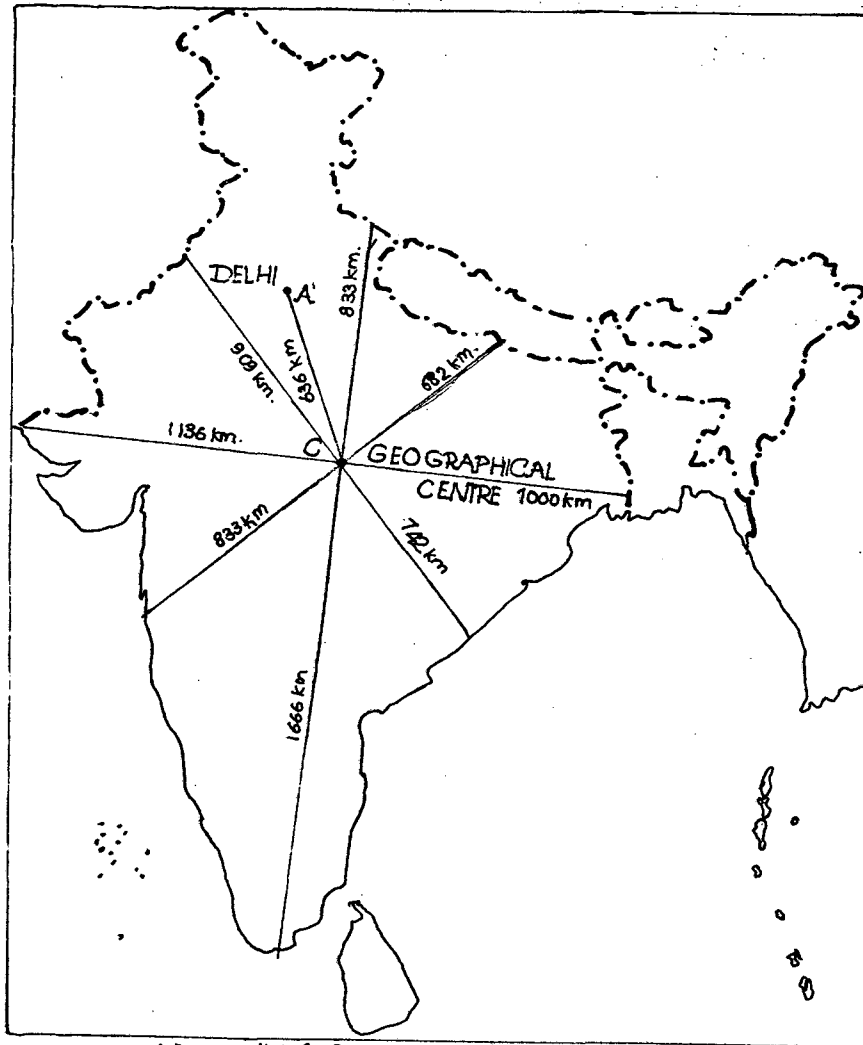
New Delhi has always been considered geostrategic ever since India was been structured right from the aryaans to that of the Alexander to that of

the Mughals and the British.. It is often connoted as, "*the grave of many empires and nursery of a republic*", has been the National Capital for centuries . It is renowned as the greatest and the oldest capital cities in the world. The history of New Delhi has often determined the history of India.(Map 1.3 depicts the strategic location of Delhi.)

In 1206, Delhi was made the capital of the first Muslim empire in India by Qutubuddin Aibak who was the founder of the Sultanate Of Delhi. Delhi was the second capital(the main capital being Ajmer) of the Chauhan Rajputs before the muslim conquest. Delhi could have been not more than a Hindu settlement before the Muslim invasions if the myth of Delhi (Indraprastha) being the capital of the Pandavas in 1450 B.C. can be ignored. The selection of Delhi as the capital in 13th century A.D. was more that of an accident than planned by the Muslim rulers. Strategically Delhi was too far south to the Karnal gap to have been a gateway to that of North Indian Plains. Any invader would have avoided Delhi to reach the Gangetic Plain from Punjab. Delhi was chosen by the Muslim rulers for it was a mid-way between the eastern boundaries of Bengal and the southern borders of Turkistan and Persia.

History has been a witness as in how Delhi had a magnetic effect of remaining a capital for centuries. Be it the shifting of capital by Mohammad-bin-Tughlaq from Delhi to Dulatabad and back or by the Akbar's capital homecoming from Fatehpur Sikri back to Delhi or Shahjahan on Agra and back or by British on Calcutta. The belief that "he who rules Delhi would rule

STRATEGIC LOCATION OF DELHI



A = CAPITAL: New Delhi ($28^{\circ}38'N-77^{\circ}12'E$)

C = GEOMETRICAL CENTRE (south east of Jabalpur) $22^{\circ}30'N$ latitude and $82^{\circ}30'E$

The geographical centre of gravity of a country can be found by several methods. But the one described here is a much easier method. A more rapid method simply involves cutting out exact shape of the area in question on stiff card of even thickness and balancing it on a pencil point; the mean centre then lies at the location where the shape will balance (Richard Muir). By this method, the geographical centre of gravity of India has been found to be near Jabalpur in Madhya Pradesh.

(Map not to scale).

Source: Davidi R.L., *Fundamentals of Political Geography*, 1990.

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India” was blindly consumed. This was however due to Delhi’s geostrategic location. During the British era, in 1939, Whittlesey observed that India had an *ecumene* centered around the four cities of Delhi, Calcutta, Bombay and Madras (this was after the shifting of the capital city from Calcutta to Delhi in 1911). Calcutta remained the capital of British India from 1847-1911. There were stints when Delhi was a winter capital and Shimla was the summer capital but this was due to the climatic convenience of the British administration.

Since 1947 when India became independent from the British rule, New Delhi occupies a supreme position in India because all the national decision making takes place here. It is the *ecumene* of India. Politically Delhi was elevated to the National Capital Territory through the 69th Constitutional Amendment with a state Assembly. Located at 28°38’north to 77°12’east, Delhi lies in the north-west corner of India, however not centrally located with the entire India extending from 8°4’north to 37°6’north and 68°7’east. New Delhi has an eccentric location in the country but topographically is a favourable siting between the rocky ridge in the west (offshoots of Aravalli mountains) and river Yamuna in the east. This rocky ridge through the centuries has guarded the narrow gateway to that of the Great Northern Plain of India. Delhi, though is the administrative center of the state and central in respect of population, is not so in respect of location. It also lies in the neutral territory that is neither a part of Haryana, nor a part of Uttar Pradesh. Having

a population of 13,782,976 people²³ (according to the 2001 census) Delhi has 1.34% of the total population.

On the other hand Chandigarh having a population of 900,914(2001 census) has only 0.09% of the total population of India. It has been given the status of a Union Territory. It is a capital shared by Punjab and Haryana and holds well suited geo-strategical importance vis-à-vis Delhi and can act as a standard standby in times of crisis.

With this geographic introduction, the gregarious topography of India's Northern Sector should be given a second look in terms of geostrategy. The following chapter examines the various geostrategic imperatives India's Northern Sector holds keeping in mind India's geography in the Northern Sector.

²³ See R.L. Dwivedi, 'Fundamentals of Political Geography', Chainya Publishing House, Allahabad, 1990.

CHAPTER II

GEOSTRATEGIC IMPERATIVES: BACKGROUND OF THE STRATEGIC REALITY

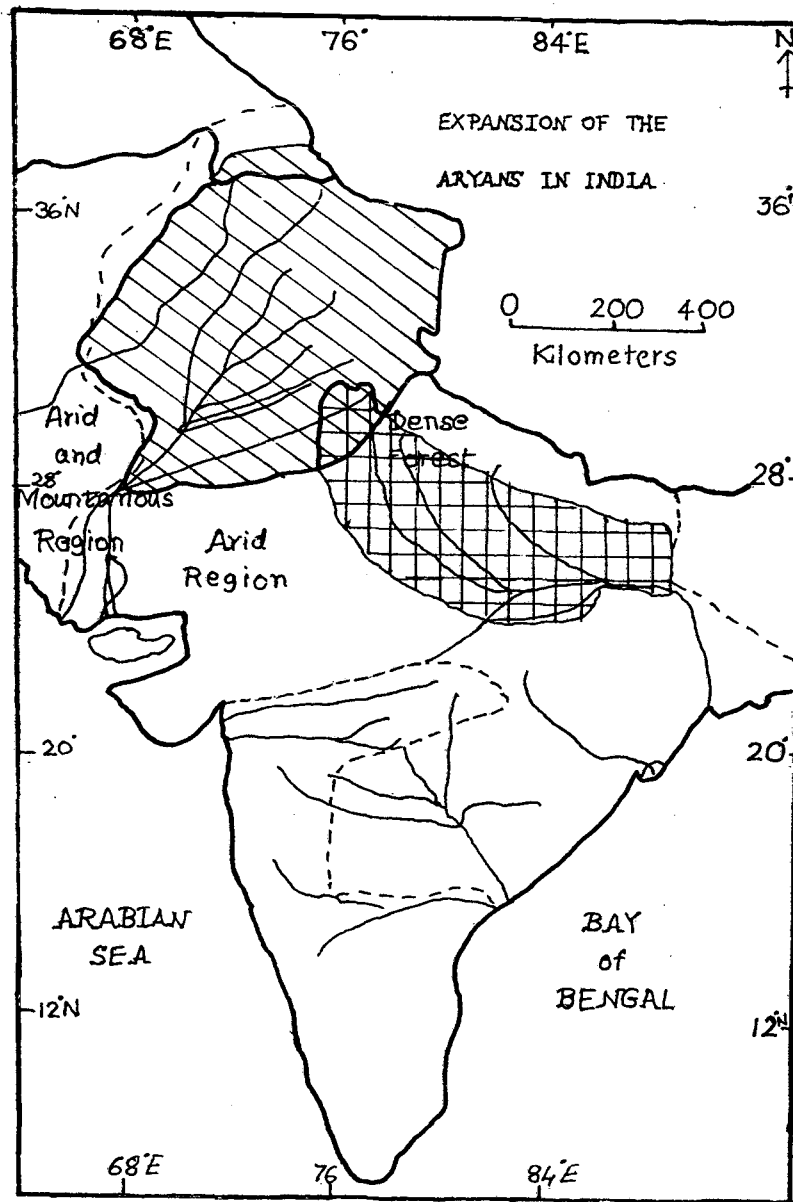
The Northern sector becomes very important for all strategic purposes. The geostrategic imperatives in the northern sector have been three dimensionally drawn namely from historical, geographical and military perspectives. Geostrategy deals with the strategy. It examines the geopolitical and strategic factors that together characterize a certain geographical area (in this case: India's Northern Sector) so that governmental strategy based on geopolitics would draw out an intelligent plan of options against any eventual military threat to the nation.




(A) HISTORICAL GEOSTRATEGIC BASE

The Northern Sector in India has assumed geostrategic importance right from the advent of the Aryans to that of Alexander's expedition to and hence through the time span of the consolidation of Ashokan and Mughal empire (Map 2.1, 2.2 and 2.3). Thus it is evident that the Northern Sector has always remained strategic from the historic times. The entire geostrategic game in the Himalayas starts with the recognition of Tibet as the 'Roof of the World'³⁰. The Himalayas, Karakoram, Pamirs and the Hindu Kush mountainous regions, whose approximate area is 418,500 sq. kms. The Mount Everest, the highest point on the earth, 8848 mts. is located in this region. The

³⁰ Maraini Fasco, *Where Four (World's meet)*, Hamish Hamilton, London, 1964.

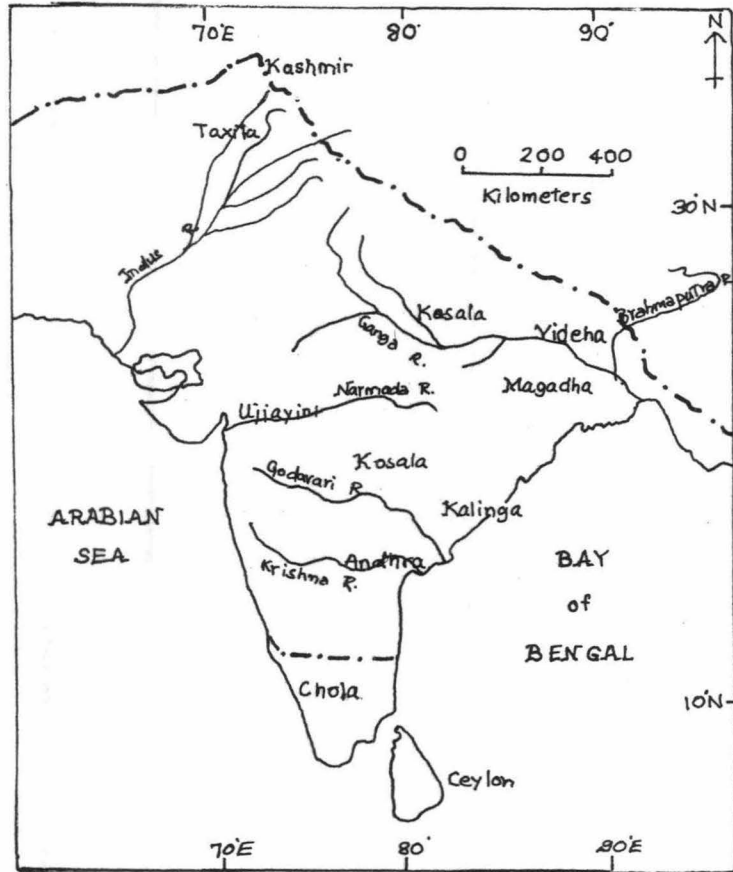
ARYAN CONSOLIDATION IN INDIA



- First Home of the Aryans 
- Eastward March of Aryans 
- Limit of the Expansion of Aryans 

ASHOKA'S CONSOLIDATION OF INDIA

THE EMPIRE OF ASHOKA
250 B.C.

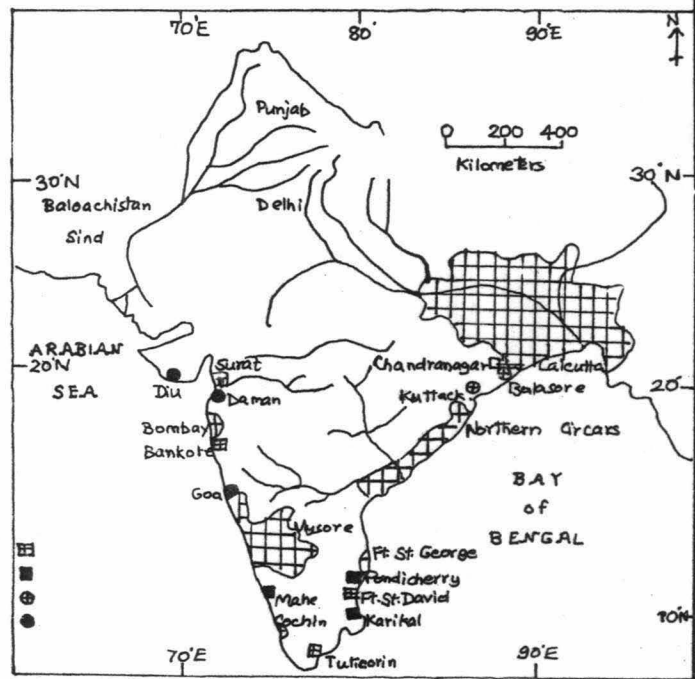


CONSOLIDATION OF INDIA UNDER MUGHAL EMPIRE

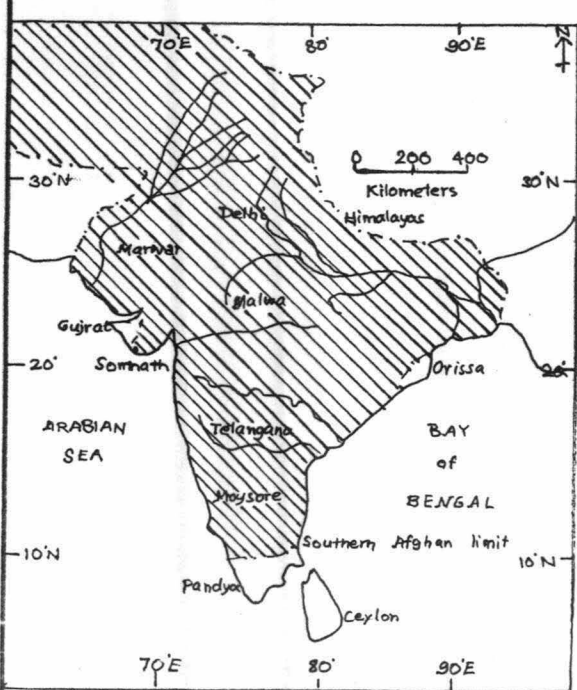
INDIA IN 1752 A.D.



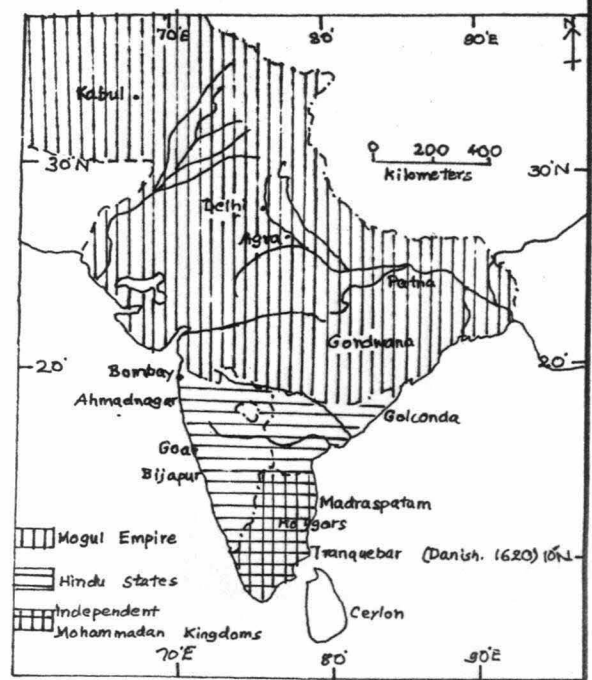
INDIA IN 1784 A.D.



INDIA IN 1312 A.D.



MOGUL EMPIRE IN 1605 (Akbar)



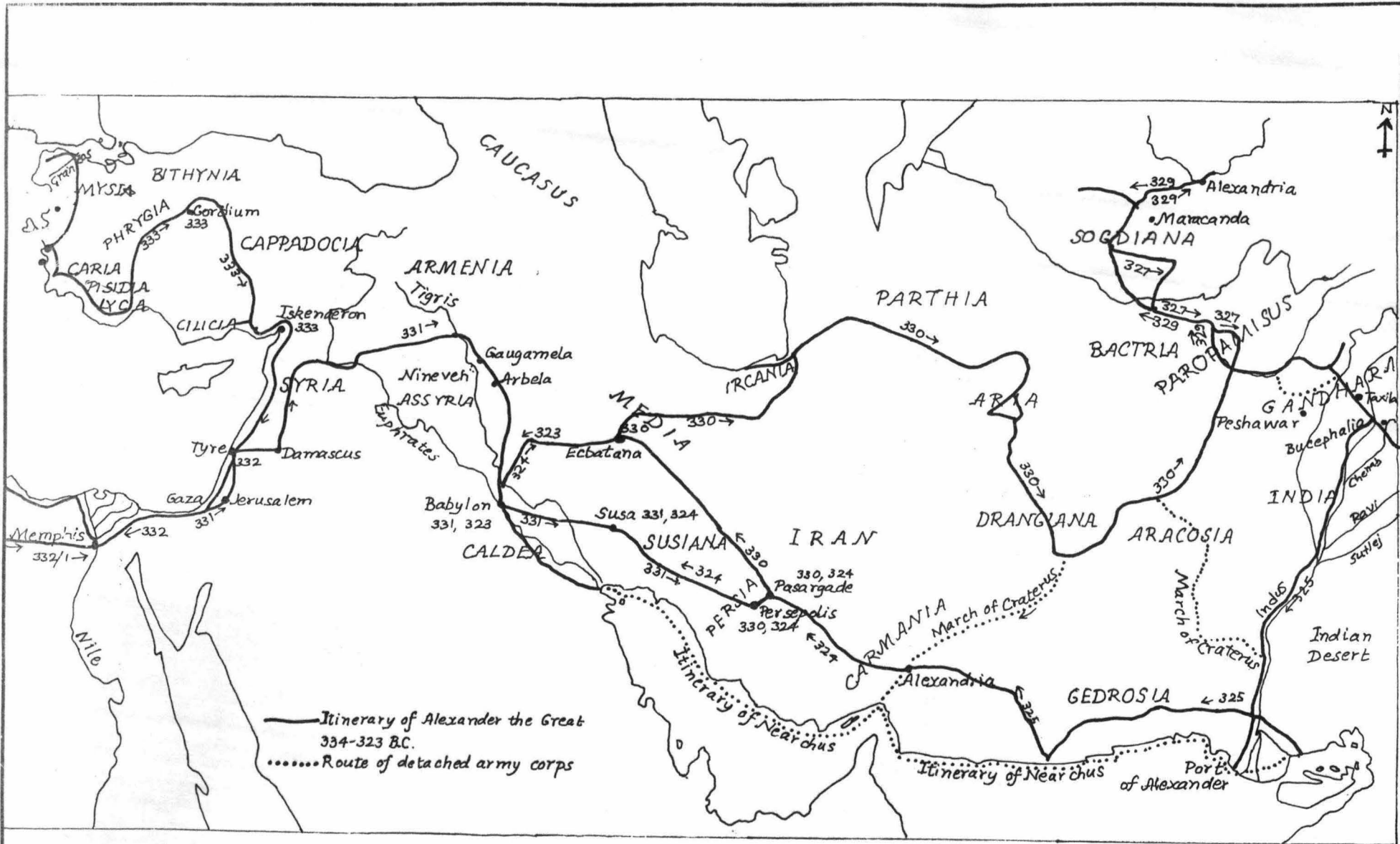
Source: B.L. Sukhwal, India - A Political Geography, 1971.

Himalayas, the great mountain range, stretching from the river Indus to river Brahmaputra, of less than 2400 kms, was a natural barrier from the rest of the Central Asian countries to the present India. The collision of Laurasia in the north and Gondwana in the south (the two super-continents) led to formation of the Himalayas, which is still in the process of creation along with Karakoram, the Pamirs and the Hindu Kush, as these ranges are being thrust up by 10-12 cms a year.

As the Himalayas rose up, the southeastern monsoon got trapped within the sub-continent of India. With this the once lush-green Central Asia got transformed into wastes of sand. As a result floral, faunal, agricultural and demographic prosperity accentuated in India leaving Central Asia to add to its woes. The compounding prosperity in India hence became a pull effect for Central Asian masses to perforate the challenging topography of Himalayas in order to escape the harsh and increasingly hostile topography. Hence the warlike Mongolian tribes of Central Asia or north facing Himalayan slopes began the process of great migration for richer pastures through mountain passes into south facing Himalayan slopes.

Thus the Mongolians, Central Asians and Europeans have been trying to always push towards south and the Caucasoid invaders made their way in 329 BC to India by crossing the Hindu Kush through the Khaiwar (Khyber) Pass in Afghanistan to India (Map 2.4).

THE ADVENT OF ALEXANDER: INROADS INTO INDIA



— Itinerary of Alexander the Great 334-323 B.C.
 Route of detached army corps

Source: Manson M.K., Routes in Western Himalayas, Kashmir, Ladakh, Punjab, II, 2nd ed. vol. 1, Calcutta, 1929.

In the early 13th century the Mongols plundered the central Asian region. Then in 14th century, it was Tamerlane who plundered and devastated north India to the full making his way via Khaiwar (Khyber) Pass. This Mongol invasion³¹ broke the ice then into the Indian sub-continent and periphery Himalayas that appeared as an effective barrier was perforated. Thus what appeared as a Forbidden City to Europeans was also invaded by the topic journey of Thomas Manning in 1811. In 1904, the British invasion into Tibet and the occupation of 'Lhasa' (the Forbidden City) under the flagship of Lord Curzon the Viceroy of India forced the British close to behave neutral with Tibet fearing the Russian designs on Central Asia. Thus they managed to throw open the road to Lhasa. (Map 2.5 depicts the British travel inroad into China by E.K.Mallart in 1937).

Ironically, it was the Chinese that took advantage of this more than that of the British. This was because the British offered a treaty of friendship to Tibet such Tibetans would refute total Russian intervention. The British reluctance to garrison led Tibet to the fleeing of Dalai Lama to Chinese and returning with Chinese intervention in 1906 and this led Tibet be under Chinese suzerainty ever since. Equations immediately changed with Dalai Lama's refuge in India. With this the "Great Game" began to the power-struggle in Central Asia between the empires of Great Britain and Imperial Russia. In order to maintain the power on one hand, the geo-strategy was

³¹ Cameron, Ian, Exploring, The Himalayas (Royal Geographical Society Exploring Series) Long Group Ltd, England, 1985.

developed by the British in Northern Sector of India. For that, mapping the Himalayas was the first step. Hence for the annexation of Punjab in 19th century, the British surveyors were attached under Sir George Everest, the 'Surveyor General Of India', of the 'Great Trigonometrical Survey of India. It was in 1830 that the establishment of the 'Royal Geographic society' took promoting geography and geographical research seriously. In 1892, the first major mountaineering expedition was flagged under Martin Conways in order to take the great glaciers of the Karakoram achieving climax in 1953 when Mt. Everest was on the triumph of Hillary and Tenzing. The colonial ambitions of the British in India were too detailed and farsighted.

The British in India resorted to follow a 'strategic frontier zone policy.'³² This policy was based on controlling the reverse-slope of the mountainous northwestern and northern frontier. The strategic frontier zone was configured in the following manner:

1. It was dominated by 3 buffer states on the periphery:

- (a) *Outer buffer zone as Tibet:* The British were been to maintain their presence in Tibet. They on one level encouraged independent political forces in Tibet and on the other maintained a residual Chinese suzerainty. The British encouraged Tibeto-Indian trade in order to maintain intelligence regarding developments in and into Asia.

³² Chakrawarti P.C., 'Evolutions of India's Northern Borders Asia Publishing' House, Bombay 1971.

(b) Inner buffer zone as Nepal: It was to the vital interests of the British to allow internal autonomy in Nepal in lieu of the Gurkha troops that fought for British while the British managed Nepal's external relations. The isolated and British kingdoms of Sikkim and Bhutan were linked to Nepal India by dynastic and traditional politics. Here indirect supervision and external control had been the geo-strategy.

(c) The North East Frontier Province (NEFP): This was basically infested with hostile tribes in different terrain. Though the firm control in this area was not possible but administration became a deed of tenuous management.

2. The military administered regions were rear of the periphery.
3. Outposts were directly linked to major British fortifications along transport routes.
4. Railways strategically backed the transport routes.
5. The railway lines connected securely administered areas with the frontier zone.
6. The northwest was heavily fortified as it was the most vulnerable area and the North Central Himalayas were least defended.

The Russian presence, in the extreme north west, beyond western Himalayas and Pamirs was a principal threat to the Britain's empire in India. Mackinder in his Heartland concept also very vividly emphasized on this aspect. Kashmir was though legally was a princely state, had its strategic

northern frontiers of Baltistan and Chitral under the direct British administration through a hierarchy of British politicals, military officers and civil front administrators. Though the British hoped that Afghanistan would be similar as Nepal, but the Afghans were unaccommodating. Even here British denied the reverse slopes and depended on further fortifications by heavily investing in Khyber and Bolan Pass's fortification not to mention the extraordinary defence structure (now inherited by Pakistan).

The eastern Himalayan zone seemed secure despite the Japanese succession in World War - II dramatized the inadequate defence infrastructure of eastern India. Meanwhile Tibet proclaimed itself neutral in the war and kept extending its autonomy by using China's involvement. After the end of World War II and withdrawal of British it was considered that the ambiguous zonal frontiers were inherently "unstable" and the need for boundary demarcation was mutually understood by China and India. The Himalayan frontier was a trouble spot as Pakistan and the Chinese claimed larger areas in India and Nepal, Bhutan and NEFA contested Kashmir. Thus what seemed at a stake for India was not border adjustment, but adjustment of the entire eastern and western frontier system, which has collapsed already with Pakistan's creation. The British imperial hesitance was fully claimed by the successor states of India. In India, Kashmir, Nepal, Sikkim and Bhutan posed as problems, as leaders moved their historical client relation approach to that of states, which are attached to India by special treaties. The similar problem was faced by Pakistan by tribal zone.

Nepal unlike the other small princely states was more assertive. Its legal independence was accepted. It had unique reasons to maintain its territorial identity as it was the only kingdom in the world that adopted Hinduism as the state religion apart from its traditional Himalayan sub-system of princes, families and tribes. (Infact, the Chinese Tibet also grants an annual tribute to Katmandu). In spite of this, the British exercised their diplomatic influences on Lhasa due to their special relationship with Nepal. However, this diplomatic move made by British was important for Indian diplomacy and defence. Though Nepal maintains neutralist position between India and China, Nepal is crucial and central to India's northern defence.

The strategy in Nepal became chiefly designed to target Nepali leaders where China offered. King Mahendra, a local counter face for Nepali leader to balance pro-Indian forces in Nepal and India devalued some of its Nepali alien. Further India is almost compelled to assist Nepal from succumbing into China regardless of Nepal's policy towards India. This is a counter strategy to weaken Chinese policy of bringing resources and policies to Nepal such that Katmandu's role in Indian defence system gets dilapidated. Indian geo-strategy further stretches to Tibet where Indians restraint to either become a third party in Tibet's furore (that is potentially expensive and ambiguous) or simply withdraw from reverse slope for a 'close' in border settlement with Tibet. It is clear that Indians denied an advanced commitment for advocating their de-facto control of Tibet like the Chinese did after the Korean War. Prior

to their Nepal was used as a political proxy for facilitating trade and communications into Tibet until 1954 by India.

The confusion was put to rest on April 29, 1954 when the governments of India and China signed on 'Agreement on Trade and Intercourse Between Tibet Region of China' and India under the famous declaration of Panchsheel. Thus a basis for Chinese participation in Bandung conference for enhanced trade and exchange visits was laid. This statesman like settlement, which normalized Sino-India relations without demarcation of frontiers as specific boundary claims were deferred at the attention, diverted to general interests. While the Bandung conference was giving a congenial face to China the United States continued to distort the Sino-India equations by its extension of military aid to China, India and Pakistan. With all this as a backdrop; China did display visible sensitivity to Indian interest in Himalayas by striking a chord of a major 'détente'.

In the North East, India inherited security problems especially observing vulnerability by events in World War II following attack from Burma at industrial complex along Hoogly River. Burma became an independent state after the British withdrew but was administered as a part of British -Indian empire till 1935.

The partition of Bengal added to the geostrategic woes to India. 30 miles of the North West tip of Bangladesh, Assam is separated with rest of India, thus leaving Assam, Tripura, Meghalaya, Manipur, Nagaland,

Arunachal Pradesh dissected away from India (the only link is air transport and a seemingly perilous meter gauge, railway). Thus losing the broad gauge and strategic railways system of eastern India and the river transportation system to Bangladesh.

Here, an 800 miles Indo-Myanmar frontier zone is included with tribal insurrections. The northern frontier has an interface with China and India in the Chindwin Valley. Apart from this a 780 miles nautical route in the Bay of Bengal is a serviceable frontier with Calcutta and Yangon. India has been reluctant in extending its geostrategic interests in South East Asia despite of common historical underpinnings. The independent national capacity to support regional goals in South East Asia (especially since 1950) is missing. Indo-Myanmar relations gathered momentum after World War II. India supported Myanmar to oust Chinese civil war that spilled over into North Myanmar by granting arms to Myanmar. Keeping in mind that Myanmar had the longest frontier with China it's was important to reach a frontier agreements that was reached in 1961 when Chinese 'South Asia Policy' aimed at isolating India.

An aspect that has to be carefully cognized is that, here, India inherited 9425 miles of linear north zonal frontier, which the British were reluctant to defend. The geo-strategy of the British was to mark linear frontier lines that had defined defence and triggered relations amidst sub-continent population regarding the nature of the frontier. However, the '*real-politik*' approach of the government of India has ensured success in Kashmir, Bhutan, Sikkim,

Nepal (periodically) and Myanmar (once). India always played its diplomatic card by mobilizing the international resources such as in the United Nations, Moscow, London and Washington when it felt incapacitated to serve its own interests.

Defence Ministry in India lacks charismatic political men as organized along the British rule, its foreign intelligence is gathered by a civilian agency and is constantly under pressure from other social priorities of developing India. Geo-strategy should begin from revamping the above areas in the Defence Ministry for national interest.

B. Spatial Dimension of Geostrategy

The territorial shape and size of India is compelling enough to influence India's foreign policy apart from the balance of power and utilizable military technology. Having a 3500-mile coastline, 9400 miles of land frontier and 1.26 million sq. mile of land area, India becomes the seventh largest country in the world. This vast area is a recipient of gregarious anthropological and sociological diversity. India spreads 2000 miles from north to south from lofty Himalayas to Cape Comorin respectively and 1850 miles east to west from Rann of Kachchh to Assam. Comparing the sizes of India with respect to other countries, India is approximately, 13 times than that of United Kingdom, 8 times that of Japan, 4 times that of Pakistan and 1/3 that of Canada.³³ However, territorial enormity does not necessarily

³³ B.L. Sukhwai, 'India of Political Geography,' Allied Publishers, New Delhi 1971.

corroborate to the strength of geostrategic planning like that of Portuguese in 16th century , Dutch in 17th century and British in 19th century which had been successful and overwhelming irrespective of their shape and territorial size.

The foreign policy of India has³⁴ always commenced by its frontier character. Unfortunately, India's independence wrestled in creation of many frontiers. It shares its maximum land frontier with Pakistan and China. India is 10 times bigger than Pakistan's industrial base, 5 times larger in population and 4 times larger in area, however, this geostrategic magnanimity has always been threatened with India's obstinate inflexibility and excessive self-righteous vis-à-vis Pakistan that has strained the deep rooted and entangled Kashmir, issue losing out vital territories in 1947 (partition), 1962 the Chinese war and 1965 the Pakistani war. India has to be very stringent with the frontier policing. It is seen that in whatever political way Pakistan operates, it has its puppet string attached to Great Britain with United States of America and China but ultimately it has been trying to test the trepid waters of the Indian boundaries continuously upon Kashmir. Hence guarding and resisting the incursions like that of Kargil 1999 has become India's immediate active reaction rather than playing the 'big game' of Foreign Policy with the underpinned countries fuelling Pakistan's unscrupulous and notorious designs on Kashmir and often stretching its designs even to Gujarat's 'Sir-Creek'. The northern frontiers with China are long with issues and have been complex.

³⁴ Mishra K.P. and Verma S.P.: Foreign Policies in South Asia (ed.) Orient Longman Limited, 1960.

Dividing the Northern frontier into 4 sectors we can get the four sectors from west to east.

1. The Kashmir Frontier (The Line Of Control, the boundaries of the Kashmir dependency Gilgit, Baltistan and Ladakh): This consists of the northern Sinkyang facing frontier and Eastern Tibet facing frontier. This area is been under Sino-Pakistan *entente* by mutual agreement. The Askai Chin issue, where Chinese have clandestine built roads (linking Sinkiyang and Tibet). In total the Chinese have claimed 12,000 sq. mile of territory of Akai Chin and Changchenomo valley and have been contesting their maps to support their occupations in the national territory of India. The Chinese still hold that there are historic rather than geographic reasons to settle this issue and a permanent territorial settlement still awaits into a formal agreement and that the British delimitation of Indian territory is invalid.

2. The Punjab Himachal Frontier: The boundary of the Indian states of Punjab, Himachal Pradesh , Uttar Pradesh and Uttaranchal are strictly the Sino-Indian border which moves with the Ari Tibetan district. Geographically too the Himalayas and Satluj cleft are easy delimitations. But here too there is a double parallel range, the higher snow peaks being on the Indian side and the lower snow peaks (mainly a water shed) on the Chinese side. There are rival claims made by India and China upon the upper valleys and the lower mountain passes.

The Nilang-Jadhang area the largest of upper pastures is in near proximity to Gangotri the source of the river Ganga, the holiest region grounded by Hindus is pilgrimable intensively. Hence, any least territorial undue claims by Chinese is often passionately resisted. The 1954 Panchsheel agreement with China has the issues of 6 passes and that the area south of these passes (in the water shed area) is comprising of Tibetan population actively administered by Lhasa. It is interesting to note that here the issue is demographic (rather than historic, geographic/territorial) with tribes: Akas, Daflas, Abors and Laolactics that cannot be either Chinese/Tibetan or Indian. This issue again is current exigency highly dictated by New Delhi on Peking by the Foreign Policy makers.

3. *Nepal-Sikkim and Bhutan* : (Pawns of Sino-Indian rivalry) Nepal is an independent state caught up between Sino-Indian rivalry very inescapably. It is the only Hindu state where Hinduism and Buddhism meet culturally integrating into India as Lumbini in Nepal is the birth place of Buddha. Sikkim, Bhutan, another independent state can be areas as outer Buffer by India towards China. China's "five-finger exercise" geostrategic motive of acquiring Nepal, Sikkim, Bhutan and NEFA between 1950-54 cannot be ignored. A very important and vulnerable area within this sector is the northern tip of Bangladesh which protrudes towards Nepal leaving a narrow strip of Indian Territory linking up with Assam and the North eastern India. The 'Tin Bigha' controversy is another winning geostrategic move of Bangladesh. Another revolt in West Bengal Darjeeling district by the

extremist elements of CPI (M) suggests Chinese ideological intervention as a geostrategic move in this area which should not and cannot be ignored. The area of revolt involved 35 square miles of territory in towns of Naxalbari, Kharibari and Pansideva or the "Polish Corridor" (a continuous land link with North East and Assam). Naxalbari being 4 miles from Nepal, 14 miles from Bangladesh and 60 miles from Tibetan border is therefore of tremendous geostrategic importance. Here the Chinese encouraged the countryside peasants to stage an armed rebellion encircling the cities in order to capture it. This, the Chinese compared with Mao Tse-Tung's ideology of revolt and Peking encouraged this struggle branding it as a model Naxalbari Communist revolt. Here, the ideological strategy was used by Chinese for territorially aggressive designs.

Again, Sikkim's strategic presence however has neutralized such covert Chinese designs. Hence Sikkim becomes a triumph card for India against Chinese as Nepal and Bhutan become buffer states. Tibet's role is very delusive because no matter what Tibet claims through Dalai Lama's political maneuvers, it should be considered under Chinese domain or as a demographically and ideologically misplaced community seeking a strong clear ignored leader.

4. The North East Frontier : This area is 40,000 sq. miles roughly 400 miles long and 100-75 miles wide approximately. This area was targeted for incursions in 1962 by the Chinese. Here, Mc Mahon line is a valid demarcation between India and China. What could be the 'indirect rule

approach' by the British in remote frontier regions, the Indians now have felt administration the need of a 'direct approach' in the frontier region where effective administration is stretched upto the very links of the Indian territory by actively involving tribal peoples.

The Naga and Mizo Tribes are very recent phenomenon in the North East states of the Northern Sector. There were only popular tribes like Angami Ao, Sema, Rengma, Konyak and other tribal groups. The Naga tribes and Mizo tribes are labeled categories associated to the people living in and around Naga Hills and Mizo Hills. Thus an organized, political forces of consequences have been accidentally pressurized and developed such that these minorities have become rebellious enough and seek to China and Pakistan for liberation from the Indian union.

An important metamorphic geostrategic matter linked to the issue of India's size is India's diplomatic size international and international standing. The geopolitical as well as geostrategic strength of India likes in the size of diplomatic establishment, the number of overseas mission maintained, the international organizational activity, the attendance in 'international conferences. This could be chief whip in controlling and gaining and upper in maintaining India's size along the Northern Sector.

(B) Geostrategic Imperatives in North India

An Approach from the Defence Organization: At 54 years now after becoming an independent nation, India has reasons to closely examine its

dimensions of national security. Though by international norms, the Indian defence is modest one but after fighting major wars in Kashmir (1947-48) with China in (1962) on borders and in 1964 on western border in 1971 to assist Bangladeshi liberation and in 1999 along LOC, an ongoing security debate has been raised. The Chinese attacking the fall of 1962 caught us unprepared, the warnings Pakistani aggression in 1965 was ignored, the 1971 March there was diplomatic failure with East Pakistan and in 1999, the Kashmir insurgency occurred due to security lapses. In total 756 soldiers were killed,³⁵ 9856 soldiers wounded; and 2303 soldiers were missing. In the past 10 years 4600 soldiers have been killed and 13,500 soldiers wounded by the Pakistani proxy war waged in Kashmir. In the past two years every diplomatic round with Jammu and Kashmir has led to reactionary casualty of many soldiers by terrorist attack in various operations. Apart from this refugees more than 10 million have emerged due to people along the frontier.

Issues like insurgencies in Punjab, Kashmir, North East due to porous borders, proxy-war, terrorist attacks, energy security, nuclear and missile intimidation, cyber war threats are all to be carefully examined as threat factors from across the border. As a matter of fact, India's Defence policy³⁶ is merely a set of guidelines to be followed along the following lines:

1. Defence of national territory over land, sea and air encompassing among other the inviolability of our land borders, island territories, offshore assets and our maritime trade routes.

³⁵ Ministry of Defence, Public Relation's Office, New Delhi, 2001.

³⁶ India Defence Year Book 1998-99.

2. To secure an internal environment whereby our Nation state is insured against any threats to its unity or progress on the basis of religion, language, ethnicity or socio-economic dissonance.
3. To be able to exercise a degree of influence over the nations in our immediate neighborhood to promote harmonious relationship in time with our national interest.
4. To be able to effectively contribute towards regional and international stability and to possess an effective 'out-of-the-country' contingency capability to prevent destabilization of the small nations in our immediate neighborhood that could have adverse security implications for us.

(D)Command and Control: Indian defence set up is a three -tier organization of Army, Air force and Navy keeping in mind its geostrategic position in the sub-continent and peninsular postures. The President of India is the Supreme Commander of the Armed forces. The Defence Minister is responsible to parliament regarding defence matters and the Defence Ministry is in changes of the administrative and operational control. The Chiefs of the Army, Navy and Airforce exercise control of their respective service and in cases of Joint Operations and common administrative matters mutual cooperation is maintained command boundaries in India. The Northern Sector in India is militarily demarcated on the following lines:

1. The Army Command Zone:Under Army, 5 operational command are organized namely:

a)The Northern Command: Jammu and Kashmir, parts of Punjab and Himachal Pradesh with the Headquarters in Udhampur.

b)The Western Command: Extends over Delhi with Delhi Cantonment. As Head Quarter and Punjab and Himachal Pradesh over with Shimla as Head Quarters.

c)Central Command: MPOandB Area, Bareilly Area with Headquarters Units Jabalpur and Bareilly respectively. Head Command Units of army are Military Operations, Engineers, Territorial Army and additional units.

d)Southern Command: This area includes Mumbai area(Head Quarter Mumbai).Tamil Nadu, Karnataka, Kerala, Andhra Pradesh with Chennai as Headquarters . This area is exempted from India's Northern Sector.

e) Eastern Command: Bengal area with Kolkatta as Headquarters and North East Common Zone with Shillong as Head Quarter.

f) Training Command.

2. The Naval Regional Command: Following are three Naval Regional Commands with Naval Headquarters at Delhi. There are three Naval Regional Commands with the Naval Head Quarter at Delhi.

Southern Naval Command/Training Command: The Southern Naval Command is also designated as the training command and is designated with the training , matters of training schools and establishments, The Head Quarter is in Cochin.

b) Eastern Naval Command: Vishakapatnam has the Headquarters. The dockyard and fighting fleet is under Eastern Naval Command.

c) Western Naval Command: Head Quarter is Mumbai and has control of fighting fleets and dockyards.

The command Head Quarter has various units based under it such as fleet, submarines, Local Naval Defence Flotillas, Air Stations/Squadrons, Dockyards, Armament Depots, Store Depots, Naval hospitals, Training Schools/Establishments, Communications Centers, Development Projects

3. Air Force Head Regional Command: Air Force Headquarters are in New Delhi. The man-power of Indian Air Force is divided under administration, Logistics and Training and Flying branch. Air force strike mission is in close support for the army. Operationally, Indian Air Force is divided into Air Defence, Strike, Training, Reconnaissance Transport and helicopters. The Air Command has organized its structure into regions rather than functions due to threat factor, The 7 regional commands are as follows.

1. Western Air Command with the Headquarters in Delhi and is considered most sensitive as air operations such that of Delhi, Jaipur, Udhampur, Chandigarh. This command has severe critical permanent air-bases such as Udhampur, Ambala, Avantipur, Chanigarh, Harwara, Hindan, Leh, Srinagar and Pathankot.

2. South Western Command with the Headquarters in Jodhpur was established in 1980 with its air-operational area under Rajasthan, Gujrat to Surashtra, Kachchh to Pune.

3. Central Air Command with its Headquarters in Allahabad, covers most of the Indo-Gangetic Plains eastward Delhi.
4. Eastern Air Command with its Headquarters in Shillong is incharge of Bengal(Air defence of Kolkтта.), Mizoram, Sikkim and Arunachal Pradesh, Manipur, Assam, Tripura, Nagaland.
5. Southern Air Command with its Headquarters in Trivandrum, covers the southern regions of India, Bay of Bengal, Lakshadweep.
6. Training Command with its Headquarters in Banglore has Central and Southern India having ground training establishments.
7. Maintenance Command: Centrally stationed at Nagpur in Cental India, repairing overhaul and maintenance of Aircraft and other equipment is taken care of in this command.

Keeping in mind the strategic location of India, the military incursions since 1947, by Pakistan, China and Bangladesh in India's Northern Sector, the imperative streamlines its focus into critical assessment of the transport and communication network. It has to be understood that only on the basis transport and communication, the military threat can be minimized. India's reticence in linking its far flanged international border proximity territories has been joited again after the 1999 Pakistan incursions in Kargil following suit to the 1962 where India suffered major losses due to its weak transport and communications infrastructure. The next chapter indulges in understanding the transport and communication network inorder to meet its geostrategic imperative.

CHAPTER III

TRANSPORT AND COMMUNICATIONS DIMENSION

The main ingredient necessary to accelerate the pace of economic progress, political stability and integration is that of Transport and Communication. Apart from setting the limits of progress, Transport and Communication play a key role for maintaining national unity. India being the seventh largest country in the world and being the second most populated country in the world, it becomes an imperative that India has to be well connected by means of Transport and Communication apart from the geostrategic imperatives it fosters. Transport and communication has been examined under the three layers of railways, roadways and telecommunication for further critical assessment.

(A) THE INDIAN RAILWAYS IN NORTHERN SECTOR

The railway system in India is having 1.5 million employees³⁸ and is regarded as the world's second largest network. 'Indian Railways' has 147 years of existence and has made tremendous progress till date absorbing technological advancements. Daily about 13 million passengers benefit from Indian Railways. Initially, Indian railways were comprised of large systems with number of gauges but these systems are well organized into 9 zonal systems with a total of 62,759 route kms. The network consists of the three Gauges of

³⁸ Indian Railway Year Book, 1999-2000.

broad gauge (1676mm), meter gauge (1000mm) and narrow gauge (610mm) totaling railway track of 107969kms. 6 out of 9 railway zones fall in the northern sector (Southern zone and South Central zone do not fall in northern sector). The Railway Ministry functions under the Railway Minister who is assisted by 2 ministers of state. Apart from this a Railway Board is set up which comprises the Chairman, Financial Commissioner and five functional members. For better management the 9 railway zones are further sub-divided into 59 operating divisions.

Railway travel and distribution of Railway lines have direct political implications. Disrupting the railway movement has become a popular mode by different individuals and groups to catch government's attention. The sparse railway network in the Northeastern India and Rajasthan has caused difficulty in distributing food in times of crisis. The unity of India is directly dependent on the integration and development of the railway system in India.

Latest diplomatic moves through railway network in the Northern Sector have been the following:

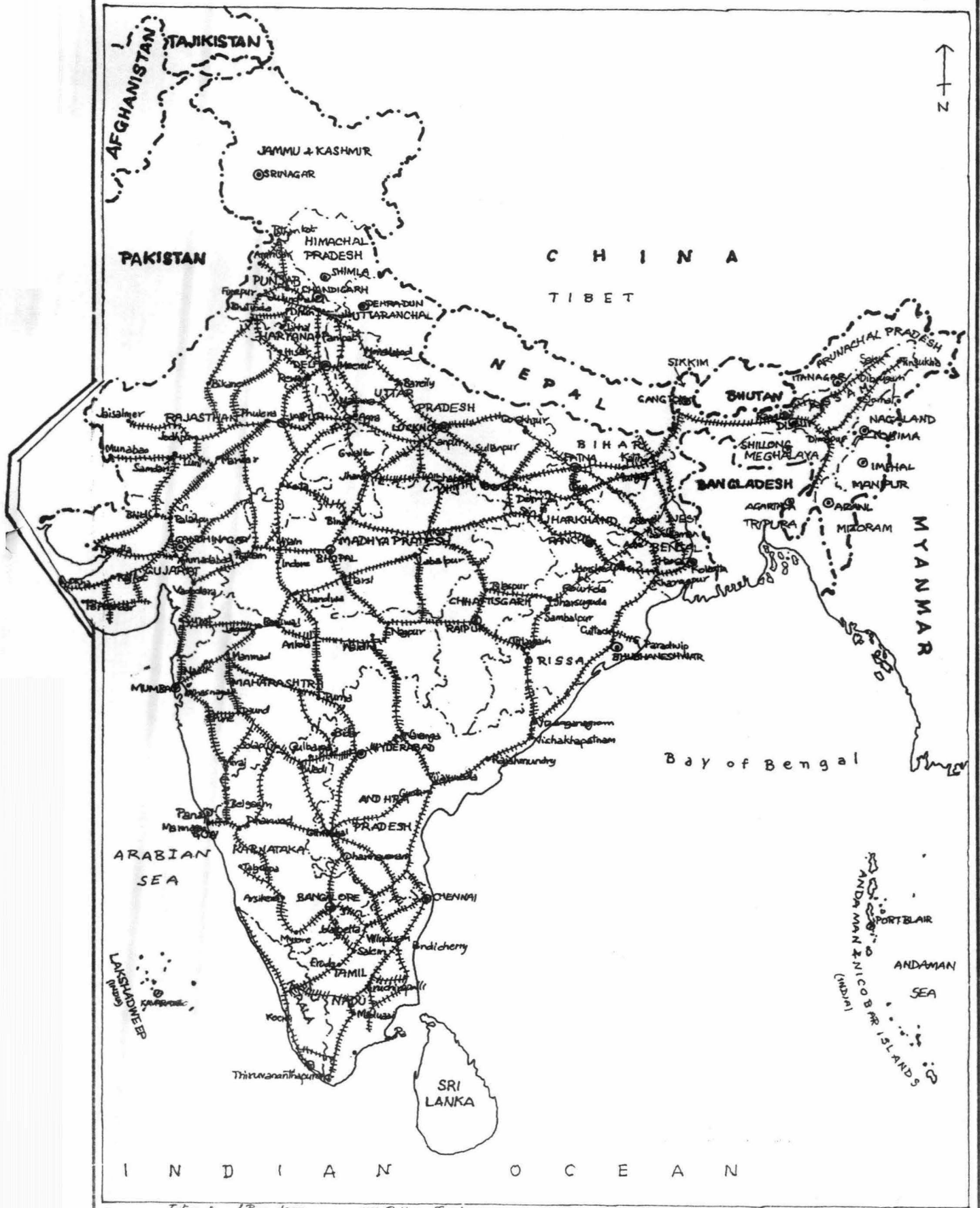
1. A new broad gauge rail link between India and Bangladesh at Petrapole-Benapole has been opened such that international trade can be facilitated. Passenger services arrangements are under formulation.
2. A new broad gauge rail link between India and Nepal is completed from Raxual to Birganj. This move is to facilitate rail transit between India and Nepal.

The total railway route in the Northern Sector is 39231 kms against 62759 kms of entire India. The average railway route in the states present in Northern Sector is 2307.7 kms of entire India. Very less railway route is in Northeastern states of Arunachal Pradesh, Manipur, Mizoram and Sikkim has no railway route in particular. Tripura is the only North Eastern state to have largest railway route of 45kms. Jammu and Kashmir is the only northern state in the Northern Sector to have less railway route of 84kms with Jammu Tawi the northernmost railway station of India. Medium railway routed states are that of Himachal Pradesh, Punjab and Assam. Gujarat, West Bengal and Bihar are highly railway routed. The states having maximum rail route is that of Rajasthan and Uttar Pradesh. Delhi, the main station of Northern Sector gets into the Guinness book of world records for having the worlds largest railway route relay interlocking system in August 2000. Among the Union Territories of Delhi and Chandigarh, Delhi has a maximum railway route of 5244 km and Chandigarh has a contrastingly low rail route of 8 kms.(Map 3.1 depicts India's rail network in the Northern Sector).

(B) INDIAN ROADWAYS IN NORTHERN SECTOR

From 7/11/2000, the Ministry of Surface Transport has been bifurcated into two: Ministry of Road Transport and Highways and the Ministry of Shipping. The 'Secretary' heads this Ministry. The critical infrastructure of Road Transport(Map 3.2) is vital for social and economic development of a country for it influences the pace, structure and pattern of development of the country. Road Transport, National Highways and Transport Research fall

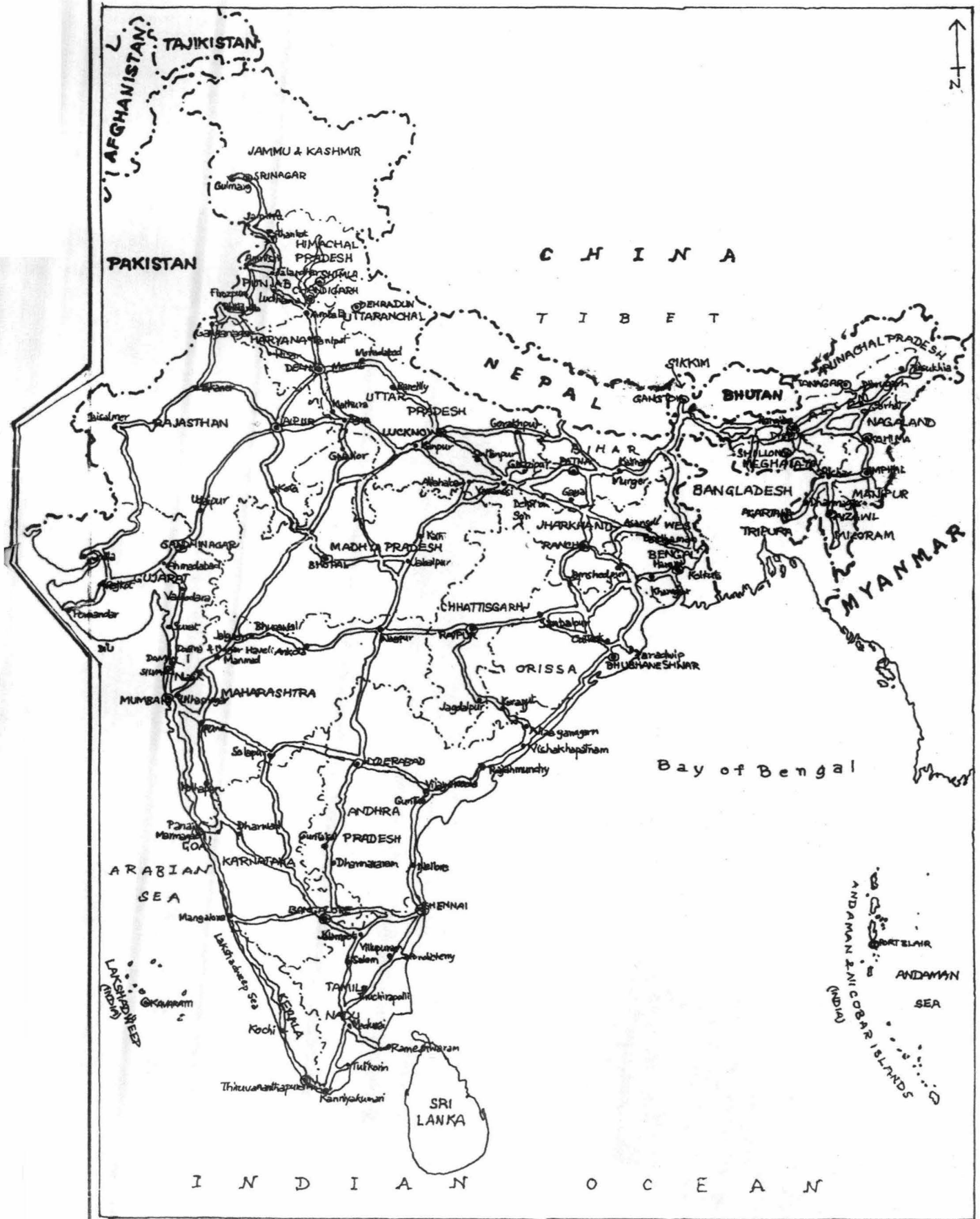
INDIA'S RAIL NETWORK



- International Boundary
- — — State Boundary
- ⊙ Capital
- Major City
- +++++ Railway Track

Source: Atlas, Dreamland Publications, New Delhi, 2001

INDIA'S ROAD NETWORK



- - - - International Boundary
 State Boundary
 ——— National Highway
 • Important Cities
 ⊙ Capital

Source: Atlas, Dreamland Publication, New Delhi, 2001

under the Ministry of Road Transport and Highways where policies and programs on these subjects are formulated and implemented. The investment in road transport sector in India, particularly highway have been made by the state due to the enormous resources required with various infrastructural externalities and long gestation periods involved. However, the involvement of the private sector recently has been incorporated for managerial efficiency and consumer responsiveness. The Finance, administration and transport research wings are common to both Ministry of Road Transport and Highway and the Ministry of Shipping. The autonomous body functioning under the administrative control of the Ministry of Road Transport and Highways is National Highway Authority of India, New Delhi. National Institute of Training for Highways Engineers is the autonomous socially and Indian Road Construction Corporation Ltd. is a public sector undertaking. Adding muscle to Indian Roadways in the Northern Sector is Border Roads Organization.

- **Border Roads Organization (BRO):** Border Roads Organization was set up on 1960 May to construct and maintain roads in the border areas keeping in view the operational requirements of Army Headquarters, and General staff for the Defence Ministry. Border Roads Development Board through the Ministry of Surface Transport funds the General staff roads. Besides this BRO has been executing Agency works of other ministries of Central Government such as Public Sector Undertakings, State Government and other organization.

The BRO has diversified its functions from construction of roads to airfields, permanent steel and pre-stressed concrete bridges, accommodation projects and hydroelectric projects allied units along with prospective tunnel construction in the near future. Apart from this, BRO has an operational role in case of national emergency, hostility outlook and rehabilitation of certain airfields of Air Force so far 32,885 km of roads³⁹ and 1513 mts length of permanent have bridges been constructed by BRO especially in the border areas in unfriendly remote terrain, high altitude and snow bound areas as high as 17,00 ft. BRO began with just 2 projects in 1960 named 'Project Tusker' (Renamed 'Project Vartak') in the East and 'Project Beacon' in the West. At present BRO is a 13 project executive force in the Northern Defence Command BRO assumes a very geo-strategic role by considering its important milestones:

1. Ministry of External Affairs works in Myanmar.
2. Construction of extensive 160 km long road network in Bhutan from Tamu to Kalembo and Kalewa in Myanmar (commenced in Oct. 97).
3. Snow clearance of 474 kms. long Manali-Sanchu Leh road and 434 km long Srinagar-Zojila – Leh road. This road NH1-A remains closed for vehicular traffic for 6 months in winter due to avalanche and heavy snow accumulation) but was kept open upto 31 Dec. 1999 by BRO historically for the first time.

³⁹ Ministry of Road Transport and Highway, Annual Report 2000-01.

4. Installation of modern lighting ventilation and traffic control system in Jawahar Tunnel on NH1-A for high road safety.
5. The 148 km damaged road NH-22 by Satluj river in 2000 July 31 was restored by BRO in Himachal Pradesh.
6. A similar restoration was undertaken in Arunachal Pradesh when 400 feet span Bailey suspension bridge were damaged by massive floods in Siang river and the vast stretches of 250 kms 'Along-Ditte-Dime-Migging-Tuting' and the 53km 'Along-Ditte-DimeYangkiong' axis were restored.
7. The surfacing /resurfacing of airfield in Kargil was completed in 15 Sep 2000. The construction of this airfield was taken by BRO in lieu of airport Authority of India. The work continued to progress even in the 'Operation Vijay-1999'.

General Staff Works: BRO at present is constructing/maintaining and developing roads for the General Staff of Army Head Quarters in the Northern Sector. There are 338 number of General Staff roads with BRO having a total length of 15512 kms (1850 km in Northern Sector and 5622 km in the North Eastern States). At present in 2001, BRO will be maintaining 17462kms of roads with an estimated 292 crore budget).

8. National Highways: The BRO is developing National Highways and maintaining 17 National Highway numbers in the North East States of India i.e. NH-44, NH44A, NH 52-A, NH – 62, NH, 150 and NH-151.

- (a) NH Sevak-Gangtok 31A: This is recently upgraded to a National Highway specification, is 92 km long and is under BRO and is being double laned.
- (b) NH-39: Dimapur-Kohima-Mao-Maram: This is a 129 km long National Highway with 104 km lying in Nagaland and 25 km in Manipur and much works has not been able to commence in Nagaland due to land acquisition problems.
- (c) NH-44: Jowai-Ratta Gher-Curaibari-Agartala: A 550 km long road passes through Assam, Meghalaya and Tripura: The raising of these stretches and provision of a drainage system has been taken. The 135 km stretch from Agartala to Sabroom is under development to National Highway.
- (d) NH-44A:Sairang (Mizoram)-Manu (Tripura): This is a 110 km stretch from Simlong to Manu in Tripura state and has been entrusted to BRO.
- (e) NH-52:Jonai Diral: A 337 km long road completely in Arunachal Pradesh is being upgraded to National Highway specifications.
- (f) NH 52A:Banderdewa-Itanagar-Gohpur: The initial 31.50 km stretch from Banderdewa-Itanager in Arunachal Pradesh is under maintenance and the rest 32 km from Itanagar to Gohpur is under upgradation.

- (g) NH-53: Badarpur-Silchar-Jiribam-Imphal: a 228km long road (70 km in Assam and 218 km in Manipur) is under a special Prime Minister package for northeastern states.
- (h) NH34: Silchar-Virangte-Aizwal-Tuipang. This is a 570 km long stretch with 39 km in Assam and 531 km in Mizoram where work has commenced. This is also funded under Prime Minister's package for North East.
- (i) NH 54A: Thriat-Lunglei : This is an 8.5 km road in Mizoram presently being upgraded.
- (j) NH 54B: Venus-Saddie-Sahia: This is a 27.38 km long highway in Mizoram being considered for further upgradation.
- (k) NH 62: Dainadubi-Nangwal Bira: A very recently declared National Highway (in 1998) is of 86.580 km of stretch from Dianadubi to Nangwal Bira falling entirely in Meghalaya is being upgraded to a National Highway.
- (l) NH 150: Aizwal-Imphal-Kohima: Again a recently declared National Highway (6 Jan 1999) of 700 kms has been entrusted to BRO. Its upgradation is planned for the next financial year.

(m) NH16: A total length of 255 km passing through Andhra Pradesh and Madhya Pradesh through Maharashtra extends from Nizamabad in Andhra Pradesh to Jabalpur in Madhya Pradesh. Commencing in 1999-2000, this work is expected to be complete in 5-year span. This would then be a road much accessible from the southern states into the Northern Sector.

(9) North Eastern Council (NEC) Roads: the North Eastern Council Road is playing a significant role in the integrated development of North East states and BRO is associated with this council in 1980-81 entrusting 2971 kms length of 30 roads. This was keeping in mind covering 3234.44 kms of area subsequently. The chief aim of the construction of these roads was to provide inter state connectivity and smooth economic flow of goods and services as places of economic importance were connected in the northeast region the total formation being 2759 kms and surfacing of 2150 kms.

(10) Indo-Bangladesh Border (BB) Roads: The Government Of India has sponsored the road fencing and road construction along Indo-Bangladesh borders under the Ministry of Home Affairs under Indo-Bangladesh Border Roads/IBB Roads. In 1987, BRO was entrusted road construction, fencing border with Bangladesh along Tripura, Meghalaya and Mizoram .733 km out of 910.11 kms of roads have been completed on date and is expected to be complete by 2002. Apart from this, 749 km of roads and 963 km of fencing as been identified by BRO, This work is in advanced state of planning.

(11) Maharashtra Government Works: 2400 kms of roads of being constructed in Maharashtra under BRO in Gadchiroli and Bhandasa. This would link southern India with the Northern Sector.

(12) Project Dantak: Ministry of External Works in Bhutan: BRO through Project Dantak is constructing and maintaining a large road infrastructure in Bhutan apart from executing other prestigious projects such as the completion of Paro airfield and Tala Hydel Projects road construction. BRO also restored the Thimpu-Phuntsholing axis.

(13) Kolkatta Dhaka bus service is satisfactorily and smoothly running but Delhi-Lahore Bus service has been curtailed from 1 Jan 2002. This service had commenced from March 1999 and its curtailment is a diplomatic move against the continued terrorist attacks fostered by Pakistan.

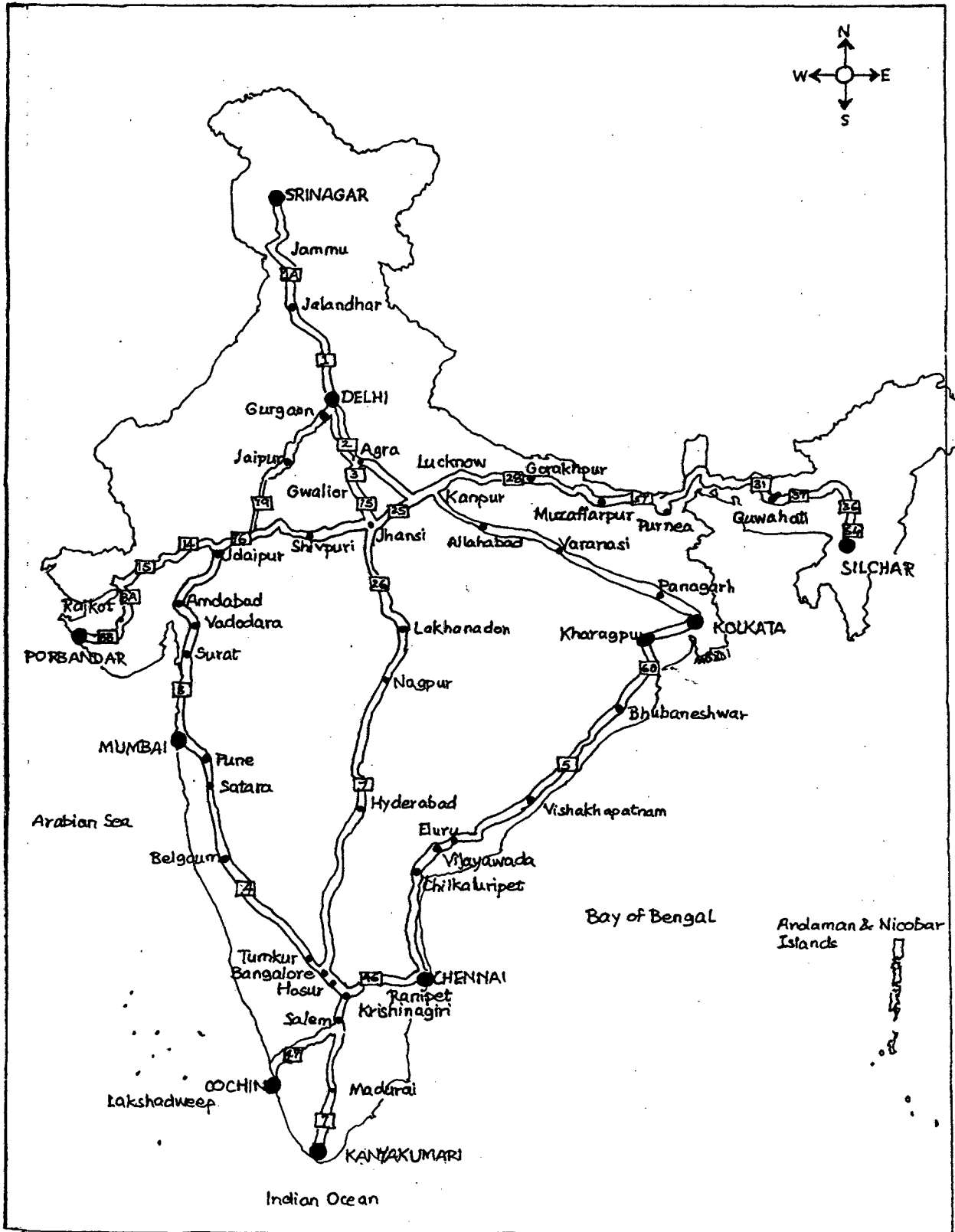
(14) The Government of India has initiated a dialogue with Government of Bangladesh for commencing an agreement with Agartala -Dhaka bus-service.

(15) A seminar on '*Transportation of Dangerous and Hazardous Goods*' was held in 2000 September fostering delegates from Bangladesh Sri Lanka and Nepal thus stimulating inter-department transborder cooperation.

(16) The National Highways Development Project: 'The Golden Quadrilateral'⁴⁰: A Stupendous National Highway improvement program has been embarked by Government of India entrusted by National Highways Authority of India. This program named as the 'Golden Quadrilateral'(Map

⁴⁰ Brochure for Ministry of Road Transport and Highways July 2001.

THE GOLDEN QUADRILATERAL (THE NATIONAL HIGHWAYS DEVELOPMENTAL PROJECT)



- Map not to scale
- ==== Golden Quadrilateral
 - ==== North-South Corridor
 - ==== East-West Corridor
 - National Highway number
 - Chief city junction

3.3) aims at connecting Delhi, Mumbai, Chennai and Kolkata and the total length of the project is 13252km with the North-South and East-West corridors of length 7300 km. The Golden Quadrilateral portion is due to be completed by 2003 though most of the stretches have been timely completed. The economic and social benefits being many, the chief aim is to construct world-class highways having an advantage of a well-developed network. Other benefits would include saving in vehicle operating costs, faster, smoother-comfortable journey, reduced fuel consumption, trade benefits from the movement in perishable goods, safer travel and reduced maintenance costs and thus catering to all round development of areas.

A CASE STUDY OF NH1-A: GEOSTRATEGIC IMPERATIVE IN THE NORTHERN SECTOR

The relevance of geopolitics of transport and communications in Jammu and Kashmir would imply that if we strengthen its network in order to densify inter and intra –settlement connectivity of Jammu and Kashmir with rest of India, we can combat the perils of rugged Himalayan terrain. We can have a better geographical as well as a political advantage. Transport and communication become tools to combat the problem of inaccessibility and disjointed communication that has made the state of Jammu and Kashmir a crucible for militancy underdevelopment and territorial encroachment by hostile neighbors.

India has suffered an indelible territorial loss during Chinese aggression in 1962 essentially due to the geopolitical neglect of transport and communications as tools of national security, defence and international

conciliation. The loss of the territory would never have occurred if India had a better, alternative, dense and effective socioeconomic and political linkage possible through high road density and dense communication network. Inaccessibility and communication gaps have created a sense of economic, social and cultural isolation of the people of Jammu and Kashmir and this has damaged the sense of nationalism. As a matter of fact the rising militancy overgrows to disproportionate dimensions, taking a threat perception of war.

On ground, at present NH 1-A(Map 3.4) is the vital link between the border settlements and Leh and has emerged as a reaction of Chinese aggression in 1962. This road practically acts as a lifeline to this region. Located at an elevation of 4000mts above sea level, NH-1A has been subjected to immense pressure on military, economic and physiographic grounds. It becomes important for releasing this pressure on NH-1A by constructing parallel highways in this area and encouraging alternative means of transport and communication. This would imply building dense network of roads in this strategically important region such that there would be effective guard on L.O.C. from northwest, north and northeast in Kashmir apart from smoother flow of goods and services in this region. This would not only enhance military vigilance but also allow social, economic and cultural cross ventilation of the settlements with rest of India.

Strengthening of India's defence positions can be well guarded with enough infrastructural back support of transport and communication, thus minimizing possible military threat from neighboring countries. The present

military incursions in Kargil sector and Drass and Batalik subsectors aimed at disconnecting NH-1A. This military strategy has reaffirmed that building alternative transportation routes should minimize the pressure on NH-1A.

Patrolling in the areas along Line OF Control (L.O.C.) would be smooth and effective. The patrolling units can be replaced/reshuffled by fresh contingents from time to time. Defence supplies can be promptly met at short notice. Casualties can be minimized due to effective patrolling and prompt medical care can be assisted to injured soldiers. Militancy can be effectively checked in the Kashmir valley. Further military aggressions such as violation of the L.O.C. can be effectively checked.

The most significant defence position along L.O.C. is the Siachin Glacier, which needs stark attention. Effective infrastructural back up of transport and communication would minimize the casualty's upheld at the most highly elevated defence position: Siachen glacier—20,000 ft above sea level!

Scope can be created for unmanned patrolling of Indian defence positions by using sophisticated means of communication such as installation of spy satellites. All these measures would provide India an upper hand in the border region.

Certain border settlements such as Ladakh, has been a historic trade center. Ancient times have witnessed Ladakh as an important silk trading center. On the famous ancient Silk Route Ladakh was connected to South and

Central Asia. Ladakh was called Central Asian Diamond because it was regarded as the gateway to entire Central Asia from China to Caspian Sea. The entire route was called the Silk Route as silk, spices (from south India); shawls and saffron (from Kashmir), tea (from China), tobacco and minerals (from Central Asia), pashmina wool (from Ladakh), apricot, sulphur and borax were exchanged. At present pashmina wool, borax and sulphur are sent out of this region, with an inflow of cereals, oils, spices, medicine, cloth, cement, and iron ore etceteras. All essential items are air lifted during winter. The presence of NH-1A in this region behaves as the economic lifeline, without which the flow of goods and services would come to a standstill.

Handicrafts such as pashmina shawls, carpets, patta, blankets, Marino shawls, metal ware (copper/silver pots) and low carved painted tables have a very small market due to low market exposure. A dense network of transport and communication would enable to flourish his industry at a rapid pace.

Tourism is a very important industry of this region, which is again heavily dependent upon effective means of transport and communication. This region is famous all over the world for its spectacular scenic beauty: Ladakh being called The Moonland! (Having an outlook of lunar topography, this place attracts many tourists from all over the world). Almost every household in this region is in one way or the other associated with tourism industry. Thus a good transport network would facilitate rapid progress to this industry simultaneously affecting the economy in a positive manner. The

telephone network is the other bankable link in this region, which if made dense, would lead to quicker economic functions

A geostrategic move to resurge and recreate the ancient Silk Route to mend transnational, trans-cultural and transeconomic barriers should be considered by geostrategists where transport routes would maintain a novel link between China, India, South and Central Asia. There are ancient places of worship dotted along the border regions such as Amaranth, Buddhist monasteries in Ladakh etceteras. There has been active pilgrim interest in these areas but due to lack of infrastructure in transport and communication, these areas have got meager cultural attention. A strong network of transport routes and communication network would lead to cultural cross ventilation in these areas of people from rest of India also leading to the promulgation of Indian nationalism and secularism. This would also attempt to erase the cultural inaccessibility of these areas.

The infrastructural bottlenecks of transport and communication can be combated with heavy investment made in this sector. High priority should be given to allocation of advanced high-level technical expertise in road construction. Alternative methods of transport and communication such as cable cars, construction of underground transport systems, more use of satellites phones and remote sensing satellite systems specially assigned to suit the needs of local population such as weather forecasting, should be developed. High frequency radio stations should be established in these areas. Technical support should be encouraged in this field. Use of terrain friendly

modes of transport such as snow scooters should be locally encouraged. The locally unemployed people should be allowed to actively participate in the construction of the transport routes. The laborers involved in road construction (Border Road Organization) should be given adequate compensation in case of casualties.

Increasing connectivity of the transport routes and communication would consume a great deal of time. It would involve heavy costs and be cumbersome keeping in mind the problems of unfriendly mountainous terrain. In the long run, there would be positive results leading to an overall regional development. The standard of living of people would increase leading to economic security of the local population. However, parallel large-scale employment generation, (such as setting up of cottage industries in this region), would corroborate regional development. A strong economic security of the people would gradually eliminate the problem of militancy in Jammu and Kashmir. This would inculcate an environment and opportunity for peace to prevail in the state of Jammu and Kashmir (It is to be understood that one of the main causes of militancy in Kashmir was unemployment). The long-term objective of re-establishing an atmosphere of peace and a sense of belonging in the local masses for achieving Indian nationalism and Indian secularism would be thus achieved.

The present violation of the L.O.C. of Pakistan has resulted in sharply turning India's attention to the L.O.C. Though the defence of the frontier by the armed forces remains India's primary concern, the partly related

secondary concern has been shifted to the care of the isolated communities living just short of the frontier. The care of the isolated communities is difficult to be met with the effective means of transport and communication due to the problem of territorial isolation.

Earnest attempts should be incorporated to understand the problems of the existing infrastructure bottlenecks of transport and communication along L.O.C. because it is the only geopolitical advantage of India in this area vis-à-vis transport and communication.

The pressure on NH-1A has to be dismantled by the creation of alternative transportation routes. It has to be understood that transport and communication is the infrastructural necessity along L.O.C. India can have an upper hand geo-strategically also in the state of Jammu and Kashmir only if the network of transport and communication is dense. Commanding accessibility among settlements would imply commanding link between the border settlements, which is much vital and crucial to achieve success in regional development, Indian nationalism, Indian federalism, Indian democracy and Indian secularism. This would in turn reverse the diagnostic failure of India in uprooting the Kashmir militancy problem, which emerged due to territorial isolation, underdevelopment and political mishandling.

The ultimate objective of the transport routes and communication network apart from achieving military accessibility and regional development is to integrate the population of Jammu and Kashmir with the people of rest of

India. This would reinforce a sense of nationalism apart from the geopolitical imperatives India serves in the state of Jammu and Kashmir simultaneously taking care of the undercurrent of international conciliation.

(D) INDIAN TELECOMMUNICATIONS IN THE NORTHERN SECTOR

In India, the Telecommunication sector has much to be developed. There are about 30,789,544 Direct Exchange Lines (DEL's) entire India. The Northern sector has 1,944,320 direct exchange lines. On average there are 114372 direct exchange lines in the Northern Sector. Uttar Pradesh has the maximum direct exchange lines of 217703. On the other hand the north-eastern states (except Assam) in the Northern Sector have an average of 5339 DEL's. Assam has the highest DEL's of 405,211. States having very high direct exchange lines in Northern Sector are that of Uttar Pradesh, Punjab, Uttaranchal and Rajasthan with an average of 191,614 DELs. High DEL's are in West Bengal and Gujarat of an average of 255,933. Low DELs are in Bihar Himachal Pradesh 54,695.

Overall telephonic communication is very less in the state of the mountainous topography especially the north-eastern states and that of Jammu and Kashmir. The Indo-Gangetic plains are well connected having maximum number of DELs. This is because it is easier to set up telephone exchange lines in the plain areas than that of the mountainous area.

However, the amount of Direct Exchange Lines present in the state are very meager than compared to the population of India and especially that of

the Northern Sector which is overall a densely populated region. The Northern Sector has an overall tele-density of 19.53. On average, the tele-density in each of the state is 1.77.

Very high tele-density is in the state of Punjab which is phenomenally high 4.49 than that of Rajasthan which is 0.76. High tele-density is in the state of Himachal Pradesh (3.44) and Gujarat (3.23). Medium tele-density of an average of (1.4) is in the states of Rajasthan, Uttaranchal, north-eastern states, Jammu and Kashmir. The states of Assam and Uttar Pradesh have low tele-density of 0.8. With this image, it becomes an imperative that means of transports and communications should be well developed because telecommunication is the quickest form of communication than compared to air, rail and road. In order to bridges the telecommunication lag satellite telephones should be used in inaccessible areas.⁴¹

E) INDIA'S AIR NETWORK

India's air network is chiefly nucleated at Delhi in the Northern Sector both domestically and internationally. The air network is dense in the state of Jammu and Kashmir and the north east because of rugged terrain that makes the road and rail transport comparatively tough. However, the international network is more routed to middle east than any of the near neighboring countries of Pakistan or China. There is no air link to China and with

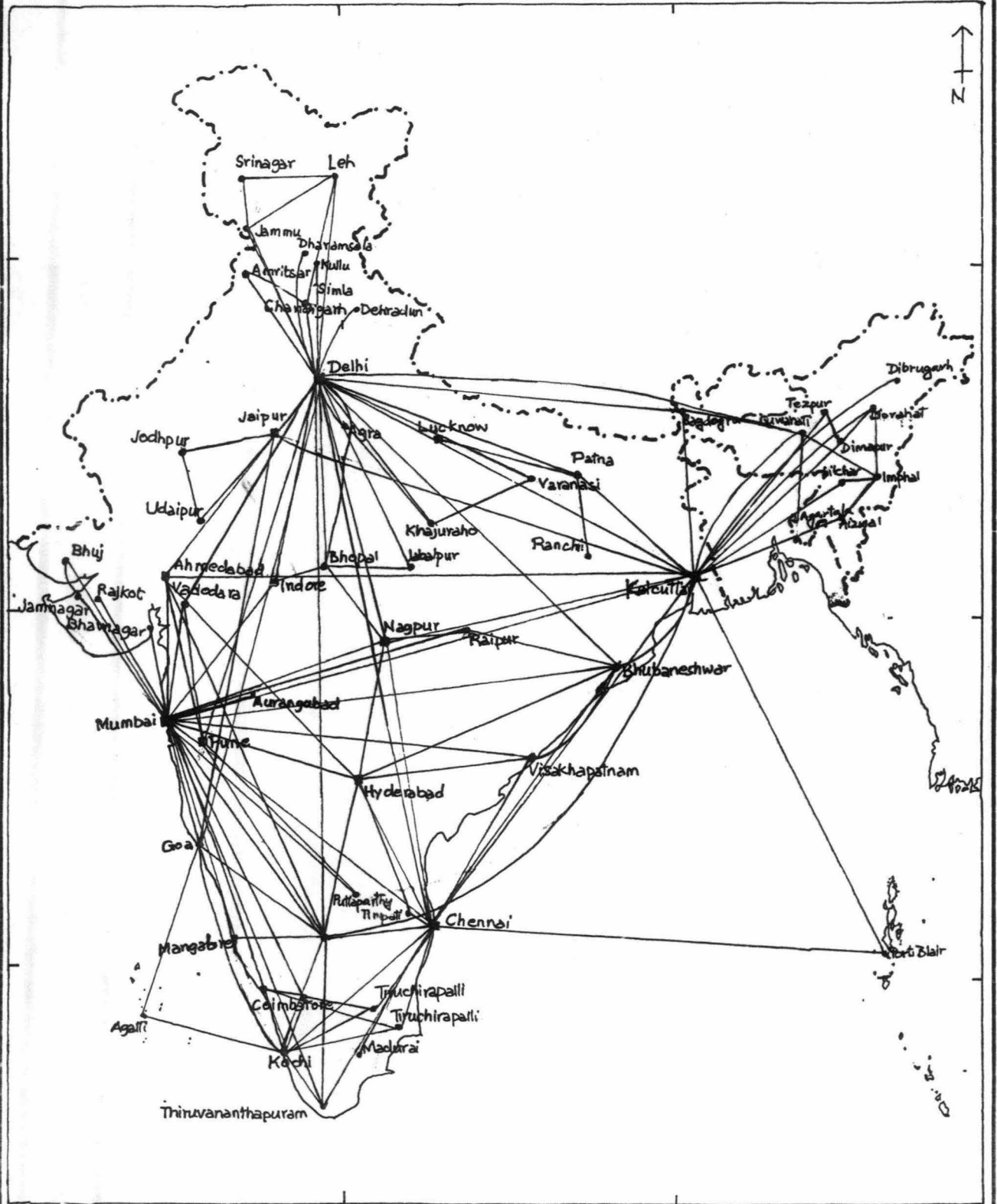
⁴¹ Indian Telecommunication Statistics, Ministry of Telecommunications, Sanchar Bhawan New Delhi, 1999.

Pakistan, all the air traffic has been curtailed as a contingency measure against military operations. (Map 3.5 and 3.6 depict the domestic and international air network of India Airlines respectively). Indian airlines a popular public sector undertaking.

After understanding the status of the transport and communication network in the Northern Sector, it can be said that there has been stupendous infrastructural development of transport and communication. The geo-strategic imperatives are effectively met. The pace of development has been rapid, continuous and interlinking fostering developments though priority areas keep shifting from north-western part to north eastern part of India's Northern Sector.

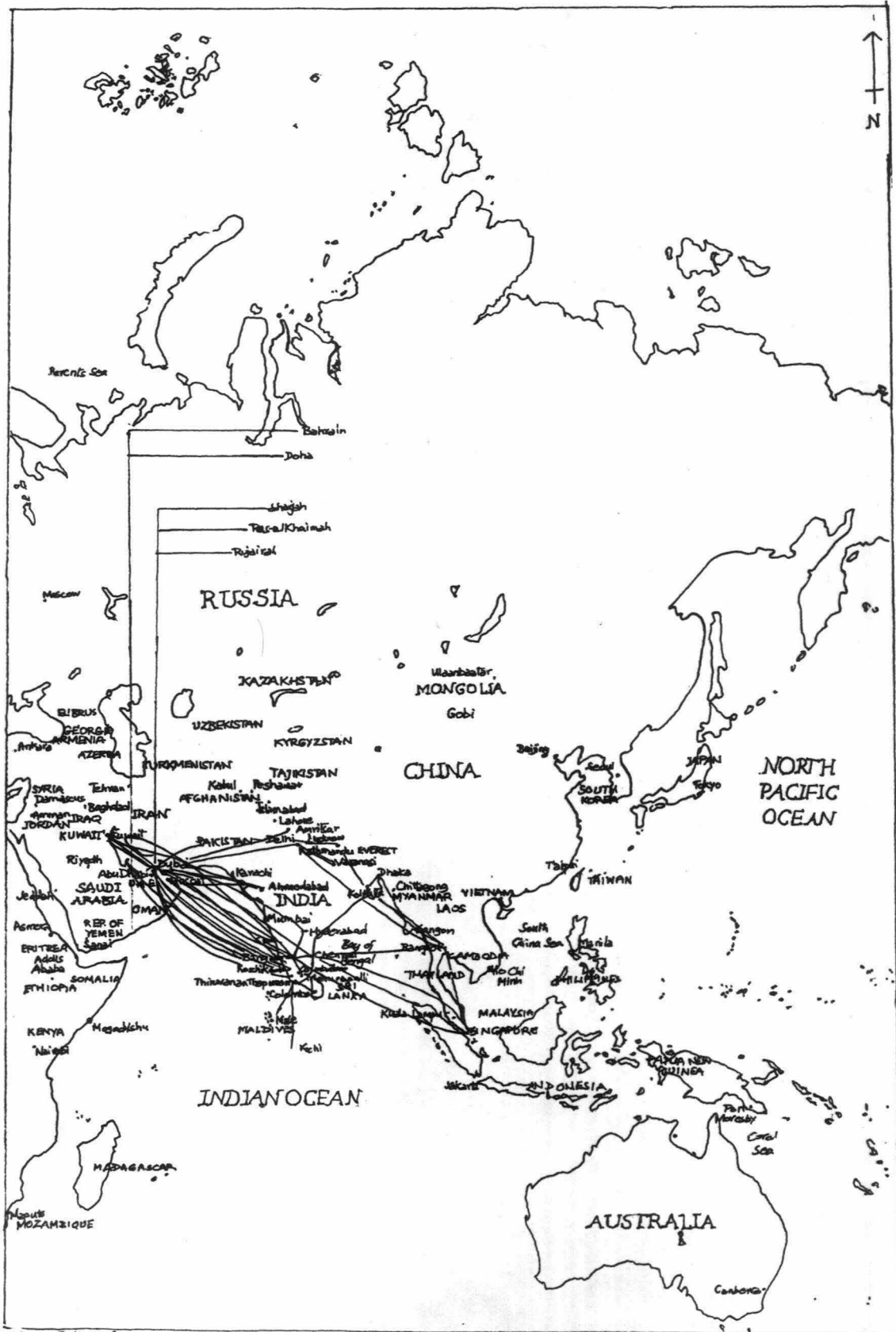
With the domestic imperative being well managed and under scrutiny, the international imperatives must be dealt with equal importance. The next chapter henceforth highlights the international imperatives.

DOMESTIC NETWORK OF INDIAN AIRLINES



- International Boundary
- Air Network
- City

INTERNATIONAL NETWORK OF INDIAN AIRLINES



Map not to Scale.

Source: Swagat, Indian Airlines Publication, 2000.

CHAPTER IV

FOREIGN POLICY MEASURES : THE EXTERNAL DIMENSION

In the domain of 'Foreign Policy', India's Northern Sector falls under '*the contiguous environment*'.⁶ The main aim of constructing a Foreign Policy is to intentionally bring responses that add to the benefit of the parent country. In the case of India, it has to be understood that foreign policy measures have to be re-examined vis-à-vis the neighboring countries such that correction of the diplomatic damage can be scientifically done especially after the military aggressions that India suffered at the hands of Pakistan and China within two decades after India attained independence in 1947. Following is an overview of the foreign policy measures that India has followed and should follow with the countries bordering India's Northern Sector such that disputes and military aggressions could be avoided in the future in the present lethal age of nuclear weapons. The undercurrent has been maintained to navigate into the aspect of transport and communication in the northern sector.

I) Sino-Indian Relations: 3000 years prior to that of the Mughal period from 12th century A.D., Himalayas have been regarded as an well guarding, impressive natural boundary frontier of India. Sino-Indian border dispute is unusually large in size, but is covered by difficult terrain of snow-capped

⁶ This category refers to the clustering of the countries that border geographically in a continent/region/hemisphere. Aspects like boundary disputes; historic rivalries and traditional friendships are common. See Rosenau J.N., *The Scientific Study Of Foreign Policy*, (London, Frances Printer. 1980).

mountains, glaciers and dense forest. The two borders fall in the worlds youngest and yet evolving Himalayan mountain range hence clear demarcation is difficult. However, the magnitude of mutual awareness and influences has been very intense in the past 50 years of the two associate civilizations than ever before. It is to understand that historically the expansionist zeal between China and British India had been extremely confrontational (from the Opium wars since 1840 to that of the British military expeditions in Tibet). This expansionist colonial zeal of British has sowed seeds of "speculation" and this till date is like an open sore between India and China. The 1962 Chinese insurgency, Chinese-Pakistan arms nexus and the Tibetan debacle: all has proved to be a bone of contention between China and India.

The international border between China and India is a classic example of mountain boundary between two countries in the world. It extends up to 4224km (including Bhutan and Tibet) and separates the states of Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Sikkim and Auranchal Pradesh. The boundary follows the axis of the Great Himalayan range that is perennially snow bound and is established, defined and demarcated on the principle of this geographical watershed. The Sino-Indian border is a combined product of Manchu policy, Chinese Republican policy and British policy. The British were more concerned to develop trade and friendship with China. The British India administration never accepted the Tibetan claim over the Tawang, since Tawang has always been an integral part of India). India and China have

historically been peaceful without animosity till 1962. The border dispute emerged in 1959 when china claimed 40,000² miles of Indian territory (the entire erstwhile NEFA) through cartographic bungling. However this dispute was cornered by limited aggression. Prior to this in 1957, violation of the Indian territory by the Chinese illegally occurred when a 100 mile long road was built through Askai-Chin in north east Ladakh joining Yarkand in Sinkiang and Gartok in western Tibet. All this triggered off the 1962 Sino-Indian military aggression. After the ending of this war a 3-point solution was settled upon which both Indian and Chinese forces were to withdraw 20 km from L.A.C. (Line of Actual Control) to end the war. Though India did not accept the L.A.C., China declared a unilateral cease-fire in 1962, November 21. As a result, China occupied 14500²miles of Indian Territory mainly in Ladakh an 2000² miles in the Pakistan occupied Kashmir, with the latter, i.e. Pakistan's express permission. However if we closely look into the 1962 Chinese aggression over India there appear to be the following causes:

- Establishment of a staunch and stable central government for China with an aggressive nationalist outlook. This policy of expansion of the Center's authority was aimed at extending into Tibet, Nepal, Sikkim, Bhutan, Assam, Burma and the Andamans apart from non-Indian Malaya, Thailand Annam, Taiwan, Ryukyus and Kuriks.
- The Tibetan debacle: The interference of India in Tibetan affairs over Dalai Lama in 20th century was undue according to Chinese. India's

border with Tibet (the Chinese autonomous region) is most complicated as boundary question arises. In Tibet, the Chinese maintain cadre strength of 300,000 soldiers. Tibet's being a plateau has a clear cut Chinese advantage if Chinese implements '*confidence building measure*' in Tibet, India's troops would have clear disadvantage on as they have to fight from below in case of combat because Tibet is a plateau. Apart from this, Tibet is now connected with other military regions and air force bases unlike 1962 and troop movement is easy in Tibet side unlike that of India in case of war.

- The communist designs of extending China into an Asian landmass countering that of Soviet Union.
- A 'Five Finger' plan: The long term Chinese plan of annexing the outlying territories/five fingers of Ladakh, Sikkim, Bhutan, North East Frontier Agency (erstwhile Arunachal Pradesh) and Nepal, keeping Tibet as a palm.
- The road across Askai Chin: The construction of the road in Askai Chin became a Chinese imperative in order to control and monitor Tibetan rebels and Khampas but was later used for military aggressions against India.
- The ideological difference: There was a stark ideological opposition between India and China. India was on democratic socialism whereas

China was advocating sectarian communism and Chinese found an anticommunist state very intolerable.

- The 1922 Chinese cartographic bungling: Chinese maps by Sun Yat-Sen claimed large sectors of Indian territory. China claims extended upto 4000 km² in Gilgit Agency and Ladakh. 5000 km² in north, northwest and southeast parts have the protectorate and 132,000 km² in correspondence. However the 1962 aggression ended by Chinese announcement of unilateral cease-fire after the Colombo Plan⁷ negotiations that stated that both the sides should retreat 20 km in the western sector as similar of that of 1959 November. However, both the countries are obstinate to reach to a consensus on this issue. The map divided India's boundary with China into three sector namely:

1. The Western Sector: This is a 1770km long boundary between Jammu and Kashmir and Sinkiang and Tibet. There is 480 km long stretch of frontier that separates the Indian state of Jammu and Kashmir from the Sinkiang and Tibetan regions of China. It runs along the Kunlun range and it forms a frontier established by the Kashmir ruler in 1842 treaty by Tibet and China. The total disputed areabetween Sinkiang and Pakistan occupied portion of Kashmir is about 13,000 sq. km to 15,500 sq. km. The remaining border is with Ladakh and Tibet. This consists of Hunza and Ladakh portions. This

⁷ The Colombo Proposal of December 1962 entitled India and China to move their forces to Mc Mahon Line except Thagala and Longju areas. India moved south of 'The Line Of Actual Control' but Chinese rejected the proposal.

boundary is an obvious natural boundary between Gilgit and Sinkiang following the Karakoram watershed dividing the Indus basin streams to that of streams flowing into Tarim basin, Mustagh Range, Aghil Range and Kunlun range across the Karakoram pass via Qara Tagh pass. This boundary is north of Haji Langer. The southward boundary runs across Lanak La, Kona La and Kepsang La. It is here Chumesang river flows across the Kailash range and Pangong lake. The watershed here is taken as a boundary that divides the Indus river system and Khotan river system in China.

It is in this area the Chinese claim the Aksai Chin district, Pangong Tso and Spanggar Tso, Changmo Valley (north east Ladakh). This area is about 5000 km². Aksai Chin is a reluctant issue on India's political table as Askai Chin Plateau is considered a no-man's land. It is considered as a desert area as it is remote, rugged and uninhabited. Ladakh though is sparsely populated area, is inhabited in the most highly elevated region of India, of an average elevation of 6000 meters. The topography in Ladakh region is of very high intervening valleys and high mountains with scattered high plains. It is noteworthy to maintain that Ladakh has maintained its own Indian identity though it has a very similar cultural and racial posture like that of Tibet and China. The Ladakh, Tibet agreement of 1665 and 1684 were confirmed in 1842 by the Dogra-Ladakh agreement but was an unsuccessful attempt to define the Ladakh-Tibet boundary. However the cartographic consensus was made from the period of 1846-1893 between India. A British note sent to the

Chinese government in 1899 confirmed the well- authenticated boundary between India and Tibet.

The Chinese did not protest the survey of India Maps in the Askai Chin area till 1866. It was in 1892 that Kun Lun range was considered as a frontier between India and China. Since 1954, the Chinese had started penetrating into frontier section and made a series of military positions into the Indian territory of Askai China. This Chinese possessed area created Line of Actual Control. The Chinese had advanced west into the Indian territory from 16 to 240 km of 31,000 sq. km by 1969. China could enter into Askai-Chin due to the Chinese creation of Sinkiang-Tibet highway. China bargained with India to officially let-off Askai-Chin area to the Chinese in lieu of Chinese civil use. China justified its stand India for India gave Asylum to Dalai Lama during Jawaharlal Nehru's regime in India. The Chinese now unilaterally and illegally posses the Askai-Chin territory and this western sector are under dispute.

2. The Middle Sector: This sector is 625 sq. km long adjoining Himachal Pradesh and Uttaranchal portions. It is located along the watershed from Ladakh to Nepal. In Himachal Pradesh, the watershed is between Spiti and Para Chu rivers and continuing that of the eastern and western tributaries of the Sutlej (the boundary across Satluj near the Shipki La pass). In Uttaranchal, the boundary lies on the watershed between the Satluj-Kali and Alaknanda - Bhagirathi.

The watershed passes of Mana, Niti, Jungri-Bingri, Dharma and Lipu Lekh finally concludes at the trijunction of China, Nepal and India. Around 1,300 sq. km of area is claimed by Chinese, including the areas in Ari district of Tibet, Bara Hoti (Wu je) - Nilang-Jadhang Sang Tsungsha Malla, Lapthal, Chuve, Chuje, Shipki La and Pussing -Sumdo

In this disputed area, the Chinese claim the following:

- Bara Hoti (Wu Je)⁸ and Nilang-Jadhang: This is a 4km² area that belongs to Tibet and not to India.
- Sang and Tsungsha (South west of Tsaparang Dzong) in Tibet were invaded and occupied by the 4 decades ago by the British hence should be returned to China.
- Tunjim La has been recognized as a border pass between China and India.⁹
- Sangcha Malla and Lapthal territories are claimed by China again and these areas including some other fall about 3-10 kms inward in Almora district of Uttaranchal.
- Nilang-Jadhang area: an area of 140 km²-situated north of main Himalayan Range has been administered since 1677 by Durbar of

⁸ Bara Hoti becomes strategically important to China because a major base built here can dominate an entire Indo-Gangetic plain.

⁹ Though the boundary area was confirmed between Tibet and British government under the 1890-1919 treaties, local officials of the Garhwal district have been exercising administrative control for some centuries now.

Tehri in India. The Chinese claim these areas on the basis of having raised funds for religious purposes. The Chinese wall map was published in 1951 and the topographical survey conducted in this area by the British and Indian governments and other maps support the Indian claim.

It is important to note that the Chinese claims in Indian areas are on paper, nothing more than cartographic bungling. China has no evidences to support its claim for it depicts gross lack of knowledge in their claimed territories in India. This was blatant when Chinese asked details of the grid co-ordinates of their “so-called” claimed Indian areas from India itself. The chief reason for Chinese claims in this area is to have control over the 6 passes in middle sector such that they can have access to trade routes. A status quo is maintained in the middle sector by India and China at present.

Nepal-Sikkim-Bhutan Frontier Zone between India and China between middle sector and eastern sector is a bone of contention between India and China. Sikkim holds 225 km boundary with Tibet (approved according to a convention between Britain and China signed in Calcutta on 17, March 1890, demarcated in 1895. Simla Treaty Map explicitly demarcated the Bhutan Tibet boundary of 500 km. The Nepal Indian boundary is undisputed. The Nepal-China boundary, Sikkim-China boundary accrues to the watershed principle.

3. The Eastern Sector: Here a 1,140 sq. km boundary is located from Bhutan's eastern limit to that of the trijunction of India, Tibet and Burma, a point near Talu pass. This boundary line is popularly known as 'Mc Mahon Line' (after Henry Mc Mahon a British representative who signed 1913-14 Simla Convention).¹⁰ This boundary line is basically the ridgeline along the Himalayan crest of the northern watershed of Brahmaputra. (A variance occurs from the watershed principle near Miguitum and Tstokaro-Tsari Sarpa: the Tibetan pilgrim places.) The Chinese claim about 94,700 km² of Indian territory including the Kemeng Frontier Division, Subansari Frontier Division, the Siang Division and three fourth of Lohit division of the NEFA. However, India can argue the case on the basis of these lines:

- Till 1956-57 the Chinese Government had no objections over the Mac Mahon line but in 1959, suddenly, the Chinese considered this boundary line illegal.
- The people of NEFA are Paleo-Mongoloids and have no kinship with the Tibeto – Mongoloids of the Chinese territory.

¹⁰ The Sino Tibetan Frontier skirmishes occurred after Tibetan revolt on Manchu Dynasty in 1917. In 1913 Tibet declared full independence. A Simla convention was signed on 3 July 1914 in order to settle border disputes. A map of Tibet was created when the boundary line between inner Tibet (India-China) was drawn with red ink and the boundary out line of Tibet (Tibet-China) was drawn with blue ink. China neither signed the agreement nor protested this published map in Aitchison Volume in 1927.

- The Indians exercised administrative jurisdiction long before 1914 and till 1952 and China had not produced a single map or any other valid proof of their claimed territory.
- The British after 1914 Simla Convention made no attempts to differ from the Mc Mahon line considering it final.

From 1959-62 the Chinese occupied Thagla Ridge, Dhola, Tse Dong, Tawang, Bomdila, Walong and Longju Sela outposts in the NEFA area. Tawang and Longju are the most critical areas in this section. The Colombo proposal of Dec 1962 was accepted by India and rejected by China. India's proposal to put this disputed border issue to International court of Justice was again rejected by China. Apart from this, China had sought to capitalize their aggression upon India by calling attention to the existence and uncontested borders is with Myanmar, Nepal, Mongolia, Pakistan and Afghanistan from 1960, 1961, 1962 and 1963 respectively.

China's double standards had become evident when it accepted the Myanmar ward Mc Mahon line and rejected the Indian ward Mc Mahon line. The chief objective of which was to grab the moral leadership of the Asian world especially among the Afro-Asian nations and to pressurize India to join the socialist camp. The China-Pakistan collusioned nexus illuminated Chinese political ambitions. India's diplomatic victory in 1962 Chinese aggression, gave Chinese ideological, political and strategic endeavors an enormous setback.

Currently (in 2001), the total road length of China¹¹ was 1,526, 389 km with 24,475 surfaced road and 156,154 km main roads. China has 56700 km rail route. These are 2 international airports in Peking and Shanghai and 142 civil airports. China has a merchant fleet of 3214 vessels as in 1998. According to 1999 status, China has 108,807,000 main telephone lines with a telephone density of 85.9 telephones per 1000 persons. Around 48 million mobile subscribes and 2 million fax machines are in use as on date. China has 72496 Post Offices and this is the second highest number than compared to all the countries in northern sector. India has the highest number of post-offices amongst the 6 bordering countries of 152,792.¹²China ranks first in-terms of GDP/Capita of 3105 (ppp\$) and also in-terms of population 127.76 crore people and Human Development Rank that is 99 with 0.706 as Human Development Index. China has 21.03% of world population than that of 16.87% of world population and a sex ratio of 933 females per thousand males than that of 944 females per thousand males of India (with respect to six bordering countries of the Northern Sector). China also has the largest military strength of 2,840,000 soldiers of army, navy and air force, which is double than that of India. After first round of discussion, Indian and China have somewhat reached a consensus upon the border difference over the alignment of a 545-km²-border stretch in the middle sector. This stretch forms a part of Himachal Pradesh. and Uttaranchal. A satisfactory progress was made on determining the Line of Actual Control in middle sector.

¹¹ The Statesman Year Book, 2000

¹² *ibid.*



TRANSPORT LINKAGES OF CHINA

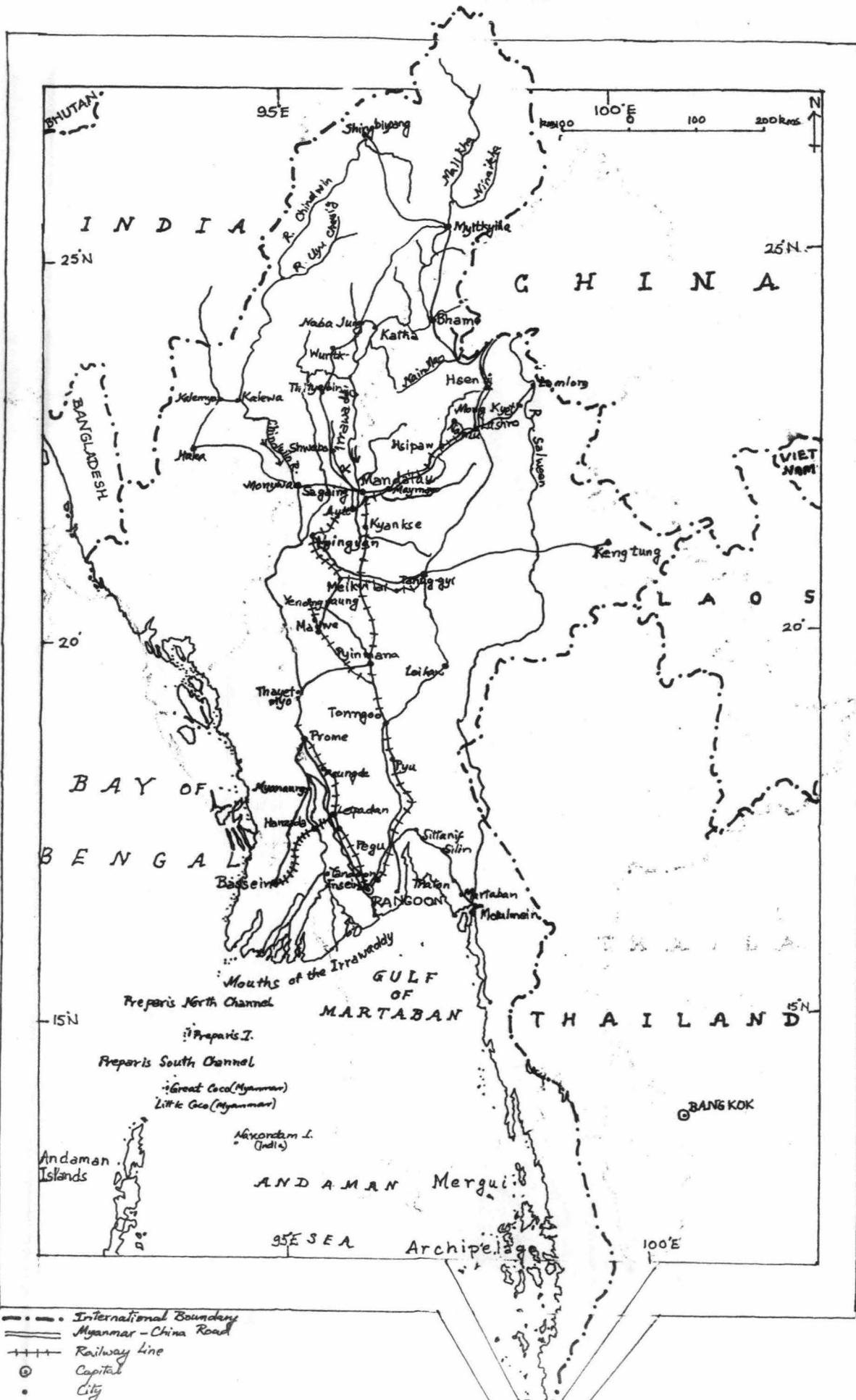
0 210 420

— — — International Boundary
 — — — Roads
 ● Capital
 ○ City
 ◻ Lake

Source: Atlas, TTK Pharma Ltd, Chennai, 1997

Map 4-1.

TRANSPORT LINKAGES OF MYANMAR



Source: Atlas, T.T.K Pharma Ltd, Chennai, 1997.

The recent visit of President Narayanan has stressed for greater speed in completing stage I of boundary resolution process where the task of deliberating the LAC of 1962 was discussed while pending the irritant issue of the Chinese export of its well-advanced conventional weapons to states like Myanmar, Bangladesh, Nepal, Pakistan and Sri-Lanka. Apart from this, Indo-China agreement on information Technology was signed for the first time this year encouraging in bilateral investment and joint ventures. The key feature of this 5-year agreement envisages technology and policy between research institutes and related enterprises. The Sino-Indian border tension is a clear ideological example of Communism and tyranny versus democracy and freedom. The Indian geostrategy in this region should be based upon the diplomatic moves and confidence building measures.(Map 4.1 and 4.2 depicts the transport linkage of China and the Sino-India boundary)

II) INDO-MYANMAR RELATIONS: Having a 1670 km long border with India. India and Myanmar share friendly relations with each other since the two nations gained independence in 1901. The formation of Myanmar 1862-1901 was gradual with Myanmar being added to British Empire and then separated. The only serious conflict arose when mass Indian emigration occurred from Myanmar to India after 1962 Chinese aggression. The positive co-operative between Myanmar and India has been the sealing of Indo-Myanmar border against illegal entry of rebellious groups of Mizo and Naga tribesmen. However cross-border terrorism has to be carefully controlled monitored between India and Myanmar.

In 2001, Myanmar has a total 28,200 km of roads¹³ out of which 3440km of roads are surfaced. Myanmar has about 3955 km of railway network. Only Bangkok has an international airport catering to the international air services. It has 100 km of navigable canals on Irawaddy River. The telephone density in Myanmar is 5.5 1000 persons). There are about 1400 mobile phone subscribers, 1500 fax machines as on 1996 and 500 internet user till date. Myanmar ranks fifth out of the six neighboring countries of northern sector with GDP per capita of 1199 (ppp\$). It is interesting to note that Myanmar world ranks 125 in human development with Human Development Index being 0.585. There are 1205 Post Offices in Myanmar. This is a very low number compared to rest of the six bordering countries. Myanmar has exploited all the means of transport and communication including rivers as a result it ranks even higher to India with respect to Human Development Myanmar uses more railways for transportation. However this is possible by its small territorial area of Myanmar with respect to China, India and Pakistan. The current bilateral measures between India and Myanmar are as follows:

- Mekong-Ganga Project: Proposed at Vientiane, this project aims at a proposed highway linking India to Vietnam through Myanmar, Laos, Cambodia and Thailand also setting up proposed linkages with Kuala Lumpur and Dhaka as well. When completed, this Asian highway project is expected to link up Singapore with New Delhi in South Asia via Kuala Lumpur, Ho

¹³ The Statesman Yearbook, 2000

Chi Min city, Phnom Penh, Bangkok, Vientiane, Chiang Mai, Yangnom, Mandalay, Kalemmyo, Jamu, Dhaka and Calcutta.

No time frame has been set up for project implementation. However, Mekong-Ganga co-operation group has appointed a committee of senior officials of Laos, Myanmar and remaining countries of the Mekong Ganga Project to chart a road map or action plan for future. Laos is the host country heading the Mekong-Ganga co-operation group with six ministers deciding to rotate chairmanship alphabetically and the ministerial group will meet annually. This declaration called for developing regional networks particularly of an East-West corridor project and the Trans-Asian Highway. This project aimed at constructing a bridge across Tiau River in Mizoram thus inculcating cross- border infrastructural linkages.

Following are the Mekong-Ganga initiatives: -

- (a) A Mekong-Ganga tourism guide and package tours to Mekong-Ganga Countries (MGC).
- (b) Scholarship to students and financial assistance for research on MGC themes.
- (c) Speedy development of the 'East-West Corridor Project' and the 'Trans-Asian Highway.'
- (d) Focus on information technology infrastructure.

- (e) Joint research in act forms and regular interactions between writers and artists.
- (f) More air-services and linkages in the MGC region.
- (g) Common efforts for the promotion of handicrafts and textiles for trade development.
- (h) Program for the conservation of heritage manuscripts sites and for their inclusion in United Nation's list and developing a network for the exchange of tourist information for development of tourism.

However, the main thrust is to improve economic condition in northeastern India and bring about overall economic development in India's Northern Sector. Stress has been laid out on private business activity within the grouping.

- Indo-Myanmar Friendship Road: This project is a 160 km Tamu-Kalewa-Kalemyo road which was inaugurated by India's External Affairs minister Mr. Jaswant Singh at Kalemyo in Myanmar. This road links Indian town of Morch in Manipur to central Myanmar and was built in a span of 3 years by Border Roads Organization of India. This project was entirely sponsored by India's Ministry of External Affairs. This road is an upgradation of II-World-War Road that would integrate South East Asia. It is a vital section of the designated Asian Highway running from Singapore to Istanbul passing through Myanmar and India. The new road

link would not only foster movement of goods in a fast pace but also, help the security forces on either side to combat insurgency. Four border checkpoints would be opened. Apart from this, a bridge linking Champai (Mizoram) and the border areas in Myanmar would be built.

- Yeywa Hydel Project near Mandalay would also be constructed with India's co-operation.
- Operation 'Golden-Bird': This a collective security operation aimed at nabbing the United Liberation Front of Assam (ULFA) militants across the border on both sides.
- Building additional road linking Tamu (Manipur) to Kalemmyo, a key communication junction in center of Myanmar is also initiated.

Thus it is observed that the means of transport and communications is used as a viable foreign policy issue between India and Myanmar. (Map 4.3 depicts the transport linkages of Myanmar)

III) INDO-PAKISTAN RELATIONS: No two countries in the world would have common geographical, historical and cultural roots such as India has with Pakistan, as both countries constituted a single economic and political entity as before 1947. The British colonial legacy carried the Kashmir dispute between India and Pakistan refused to abide the United Nations resolution, it resulted in wars of 1965 and 1971. Simla agreement was signed in 1972 ever

since Jammu and Kashmir, Siachin, Wullar barrage, Sir-Creek, terrorism and drug trafficking, have been open wounds between India and Pakistan.

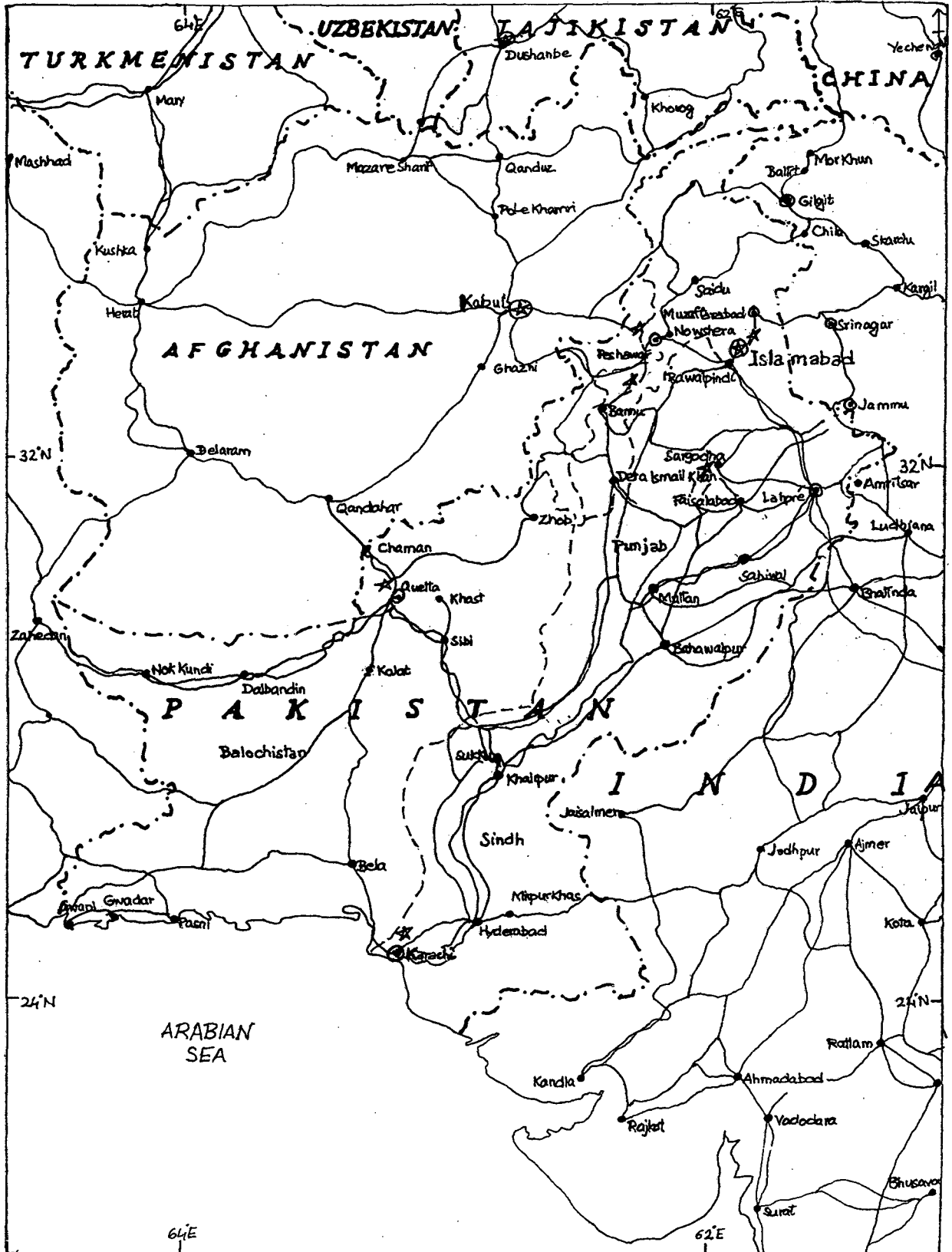
Unlike China, the hostility between India and Pakistan is more on communal grounds. Islam is the most important element of Pakistani nationhood. Indo-Pakistan hostility status has been exploited by many countries especially China. Kashmir has become the most critical geo-strategic state in the northern sector especially after the Kargil incursions in 1999 and that of proxy war post-Kargil scenario. The Lahore Bus service (initiated by India to Pakistan as a gesture of friendship) has had a catapulting effect. The geostrategy of using transport to bridge Indo-Pakistan ties proved to be a failure got unexpectedly backlashed and Pakistani incursions in Kargil happened. Pakistan is the only country where the geostrategy of fostering relation through transport and communications has not worked inspite of negotiations and dialogues.

Adopting a geostrategy of '*policy of total isolation*' with Pakistan by technological intensive approach is being undertaken. The geopolitical status between India and Pakistan is very critical both on communal, geographical, diplomatic and political grounds. The policy of status quo is trying to be maintained till an intelligent, carefully planned geostrategy is worked out from the Indian side. In 2001, the total road length of Pakistan is 247,811 km out of which 339 km were motorways and 6587 km were highways. Pakistan has 874 km of railway route. There are four international airports at Karachi, Peshawar, Islamabad and Quetta.

There are 2,861,000 direct telephone lines in Pakistan with a telephone density of 4.3 telephones per 1000 inhabitants. Pakistan ranks III (amongst the five immediate neighboring countries of India) with respect to the number of Post offices that is 13294 in Comparison to India and China respectively. Pakistan also ranks III in GDP/capita among the rest bordering countries in the northern sector of 1715 (ppp \$) and has a Human Development Index of 0.522, 135-world Human Development rank and ranking IV in the 5 border countries of northern Indian sector. No two countries in the world would have common geographical, historical and cultural roots as India has with Pakistan as both countries constituted a single economic and political entity as before 1947. The Indo Kashmir dispute between India and Pakistan was submitted to United Nations in 1948, though Pakistan refused to abide the United Nations resolution, it resulted in wars of 1965 and 1971 having resulted in signing of Simla agreement in 1972.(Map 4.4. depicts the transport linkages of Pakistan.)

IV) INDO-NEPAL RELATIONS: Out of all the neighboring countries of India, Nepal has been traditionally intimate. Nepal being a land-locked country with a 1700 km long boundary with India. Most of its foreign trade is passed through India for it is difficult to secure an alternate passage through Tibet. Apart from geographical factors, Nepal is intertwined with India socially historically, culturally and politically. There is no physical barrier separated by India and Nepal. (The Himalayan watershed is located northwards Nepal). Nepal is officially the only Hindu kingdom in the world.

TRANSPORT LINKAGES OF PAKISTAN



- - - International Boundary
- - - District Boundary
- Metalled Road
- ⊕ Capital with an International Airport
- ★ Airport
- ⊙ District Head Quarter
- City

Hinduism is common both in India and Nepal. The official language of Nepal is Gorkhali and is written in Devnagri script, which is common script used for linguistic purposes both in India and Nepal. Overall, Indo-Nepal relations have been cordial. Treaties of Saguli 1925 and two additional treaties signed in 1950 and 1958 reaffirmed Indo-Nepal cordiality. The 1962 Chinese aggression strained Indo-Nepal relations from the period 1959-63 because of Nepal's neutrality.

Nepal being sandwiched between India and China constantly is in dilemma whether to side with India or China. India's strategy in Nepal has been to support democracy, controls trade and economically and Nepal whereas China's strategy in Nepal is more of an ideological weapon where communists are used to create anti-Indian sentiments in Nepal. India and Nepal are naturally dependent on each other (India for maintaining Nepal as a buffer zone and Nepal to maintain its identity devoid of any Chinese influence, pressure and design). the current Mao group rebels in Nepal are becoming active in Nepal and for all purposes, India is supporting anti-Mao sentiments in Nepal. India's diplomatic and geo-political victory in Nepal's is a direct indicator for curbing anti-Indian Chinese designs. Nepal has 11867 km of total roads and 101 km of rail route. The international airport is at Katmandu. There are about 208,400 main telephone lines with a telephone density of 9.1 telephones per 1000 inhabitants. There were about 600 fax machines as on 195. The total number of post offices is 3885, which is considerable in number. Nepal has the least GDP of 1157 PPP\$ among all the

neighboring countries and has low HDI of 0.474 compared to the rest of the countries in bordering Indian Northern sector countries. It has a world rank of 144 with respect of human development.

The Indo-Nepal treaty that was diplomatic move is under renewal in December 5th 2001. According to this treaty, Nepal would send to India duty free goods. This is would inculcate Nepalese traders to impart goods directly form other nations and re-route it to India. This would erase heavy duty by Indian traders on imported goods if directly imported, industries like acrylic, yam, polyester, yarn, vanaspati, refined oil, zinc oxides and cigarettes would disappear. India and Nepal held a joint working group meeting on 28 June,2001 regarding border management. The main issues discussed here were preventing and curbing terrorist and criminal activities and strengthening security arrangements especially at Tribhuvan International Airport. There is a concern over 5000 madrasas along Indo-Nepal border stretching from West Champaran to Kinshenganj in Bihar. These are considered centers of drug trafficking and illegal weapons.

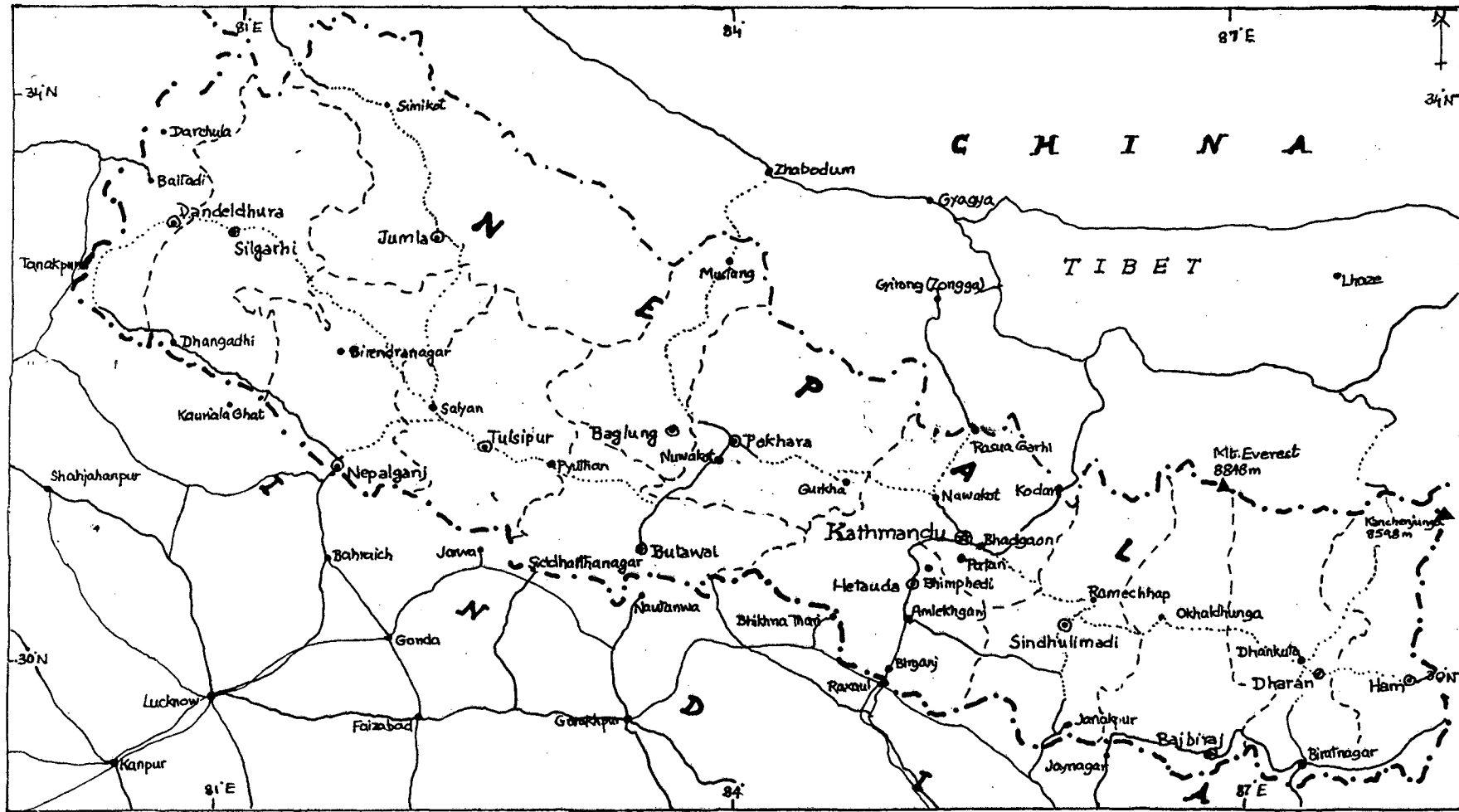
A resolution of Indo-Nepal border dispute in the Kalapani area of the trijunction of India Nepal and China as well as Susta Zone in Bihar's Champaran district has been made. A committee will be set up to prepare strip maps and try to solve this dispute through cartographic measures. Though a 1700 km long boundary was demarcated in 1920 but alignment of riverine area boundary has to be re-demarcated due to shifting of rivers. Apart from

this, Pancheswar dam (6000 MW) on Mahakali River will be completed according to Mahakali Treaty between India and Nepal.

It has to be understood that Nepal is a buffer state between India and China. Though Nepalese population living in India is pro-India but China by providing cheap and sophisticated arms into Nepal has made inroads into the psyche of Nepalese elite. The 1950 Indo-Nepal treaty and trade transit issues have yet to be reviewed. Land-locked Nepal is keen to use Calcutta port for free-movement of goods but India has however given Nepal access to land corridor for using Bangladesh port of Chittagong for trade.(Map 4.5 depicts the transport linkages of Nepal).

V) INDO-BHUTAN RELATIONS: The location of Bhutan between rich Assam-Bengal plain in India and communist occupied Tibetan plateau makes it geostrategically important. Bhutan is a backward country compared to India and India is helping Bhutan economically. India is actively helping Bhutan in the field of transport and communications network. 4 north-south highways (one at Bengal and 3 at Assam border) have been constructed such that communication within and with Bhutan can be improved. India's political association with Bhutan is the most cordial with respect to any other neighboring country. Since 1910 under Treaty of Punakha, Bhutan accepted the British guidance in its foreign affairs. The similar was reinforced in 1949 with a treaty between India and Bhutan with respect to its external relations. India has also taken military responsibility Bhutan if it is to be attacked.

TRANSPORT LINKAGES OF NEPAL



- International Boundary
- - - District Boundary
- Metalled Road
- Unmetalled Road
- ⊙ District Head Quarter
- Cities
- ⊕ Capital with International Airport

▲ Mountain Peak

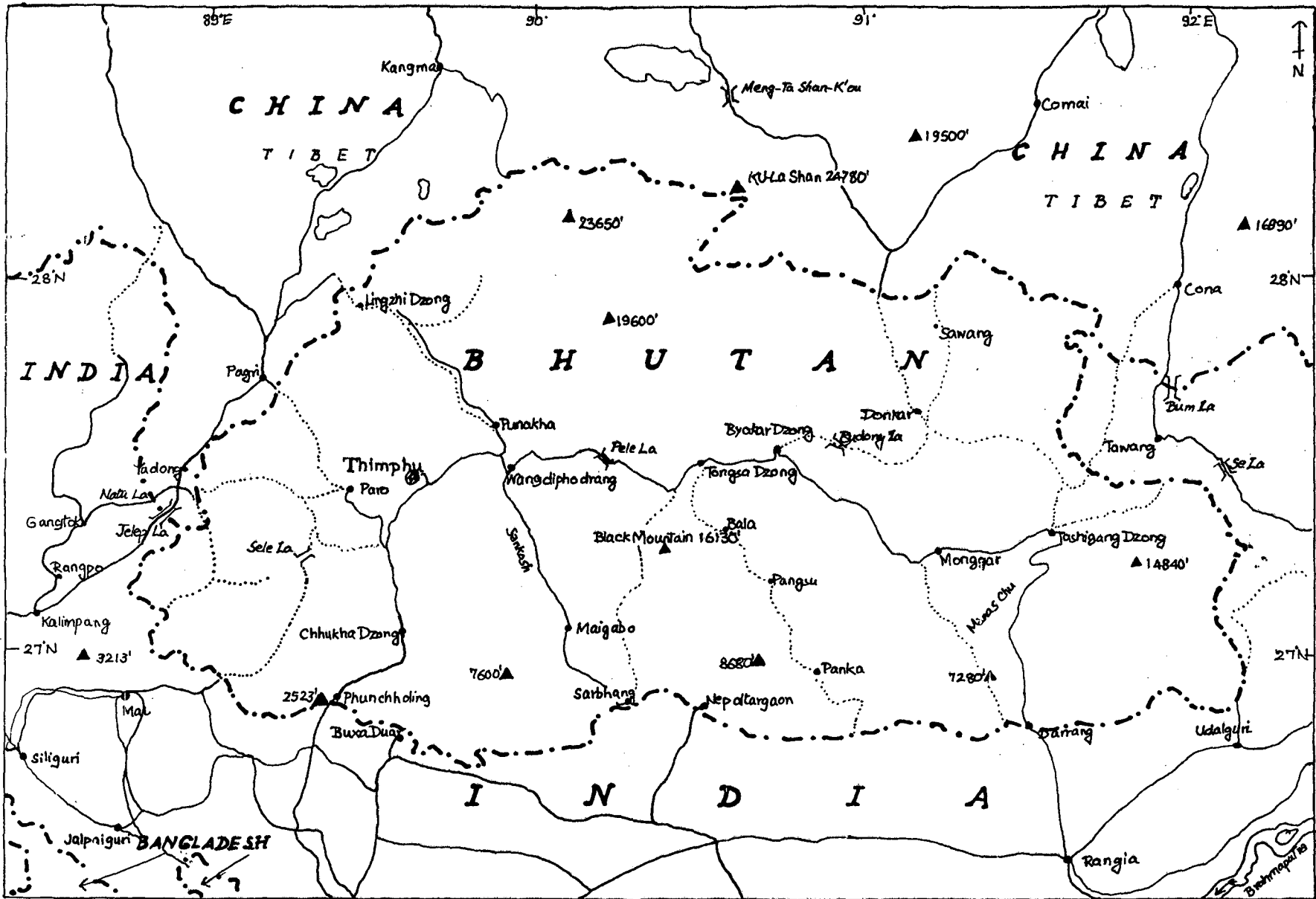
Source: Atlas, Streamland Publication, New Delhi, 2001.

Map L.4

Unlike Nepal, the geopolitics in Bhutan has to be very vigilant. Bhutan is yet another buffer zone where it could minimize the security pressure from Tibetan-China over the northeast India. Maintaining and monitoring Bhutan would indirectly guard in defending northeastern India and its northern perimeter. The landlocked country of Bhutan has 3825 km of total roads in Bhutan out of which 1548 km are highways and main roads. There is only one international airport at Yangon. The total direct telephone lines are 11800 with a telephone density 10.8 per 100 persons. A tele-communication link between Thimpu and London by Intel Satellite was inaugurated in 1990. There are about 1000 fax machines as on 1997, 3000 personal computer users as on 1999 and 500 Internet users as on July 2000. Railways have not been developed considerably . Bhutan has the least number of Post offices of 103. This is the lowest number than compared to al the 6 neighboring countries in the Indian Northern Sector. The GDP percapita in Bhutan is 1539 and has low human development index of 0.483 and 142 human development rank. It also has the least population of 2.03 million people than compared to the six neighboring countries in the northern Indian sector.

Bhutan-India Friendship and Corporation was triggered by Pandit Jawaharlal Nehru's visit to Bhutan in 1958. It was historic visit to Bhutan and hence was a landmark event. As a result a construction of a motorable road in Bhutan was initiated in the first Five Year Plan and was financed by India (1961). With this move, much good will and help continued from India to Bhutan. The current Project Dantak undertaken by Border Roads

TRANSPORT LINKAGES OF BHUTAN



- International Boundary
- Metalled Road
- Unmetalled Road
- ▲ Mountain Peak
- Cities
- ⊕ Capital with International Airport
- Lake
- ~ River
- ≡ Pass

Source: Atlas, Dreamland Publishers, New Delhi, 2001.

Map 4.5

Organization of India, has rendered good service in construction of roads in Bhutan and has built over 1000 km of roads out of the present 3461 kms of roads in difficult terrain. (MAP 4.6 depicts the transport linkages of Bhutan).

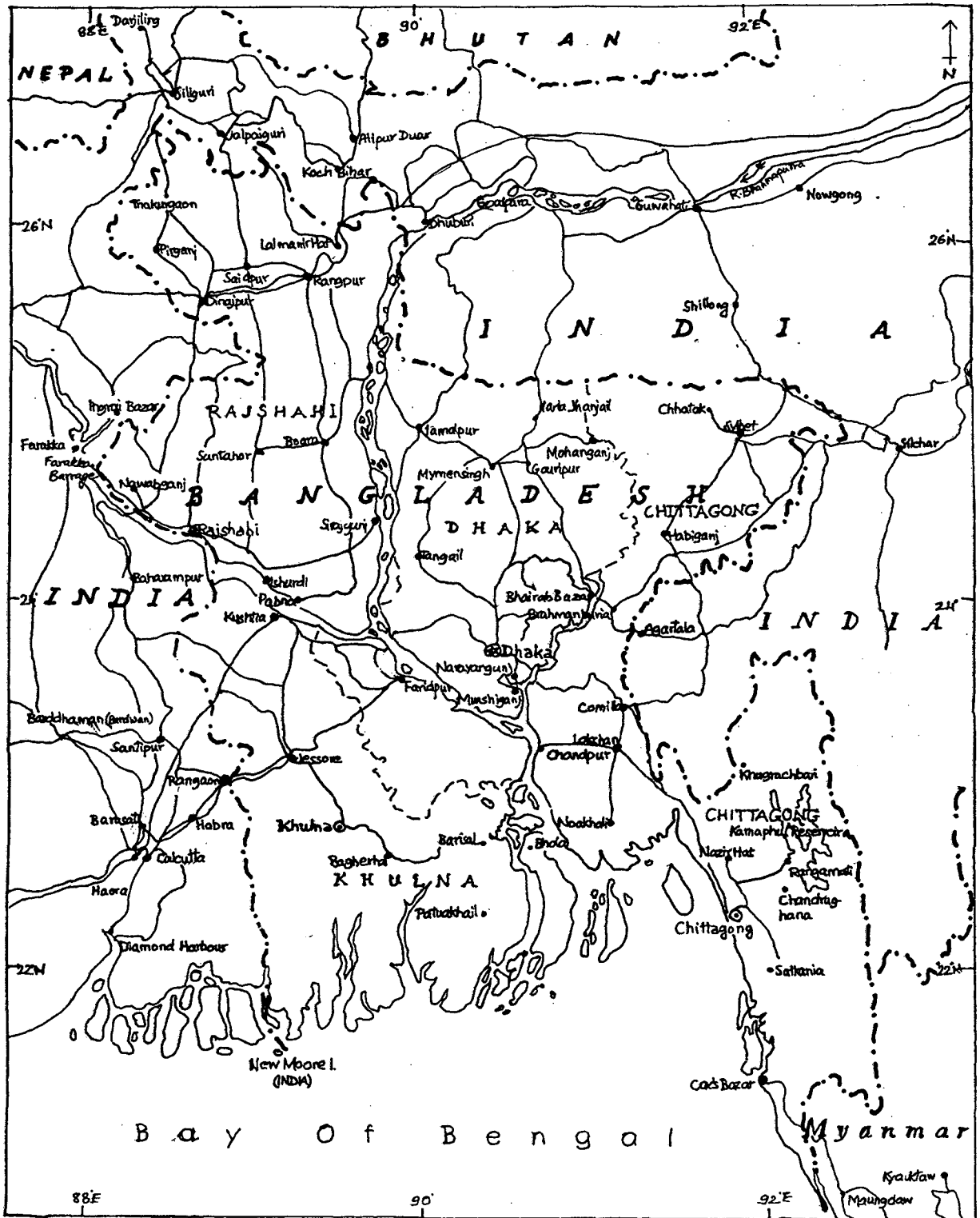
VI) INDO-BANGLADESH RELATIONS: Bangladesh shares 4000 km long border with India. Bangladesh, erstwhile East Pakistan, is one of the most crowded rural areas in the world. The world's largest Ganga-Brahmaputra delta is present in Bangladesh. India and Bangladesh shares a 4000 km long border with India after 1971 when Bangladesh acquired independence, the contending problem is that of "adverse possession of land". There are border skirmishes between India and Bangladesh such as the Bangladesh Rifles attacked Border Security Force jawans in Pyrdiwah (Meghalaya), Mankachar and Boraibari (Assam) incidents in April 2001 inspite of the fact that India, had been benevolent with Bangladesh over the 'Tin Bigha'¹⁴ issue and that of the Farakka Barrage issue and New Moore Island issue. Apart from this, the Bangladesh refugee problem due to illegal immigrants along the porous borders of India and Bangladesh has posed serious economic problems to India. There are about 18 million Bangladesh refugees in India out of which most of them are concentrated in border districts of Jalpai Gudi and Cooch Bihar of West Bengal.

Bangladesh contains 207,182 km of roads and 34850 km of main roads and 27023 secondary roads. (Floods destroy about 10,000 km of roads). It

¹⁴ In 1992, India grounded a 999-year lease of the Tin -Bigha corridor linking Bangladesh with its enclaves of Angarpola and Dahagram.

also has a rail route of 2706 km out of which 884 km has 1616 mm gauge and 1822 km is of meter gauge. Two international airports are at Dhaka and Chittagong and there are 8 domestic airports. There are about 249,100 main telephone lines in Bangladesh with telephone density of 5.5 telephones per 1000 inhabitants. About 1400 mobile phone subscribers are presenting Bangladesh and. In 1996 there were about 1500 fax machines. Around 500 Internet users are present. There are 1205 post offices in total. Bangladesh has a GDP of 1361 of (ppp \$) with a Human Development World rank as 146 and Human Development Index as 0.461. This is the least out of the six bordering countries in the Northern Sector. Recently, an Indo-Bangladesh agreement was signed on introducing a fully reserved passenger train service between Sealdah (Kolkatta) and Bangabandhu Setu East in Bangladesh. Also, Indo-Bangla Rail Link Agreement was signed on 4July, 2000 to restart goods train link after 26 years. The link is between Benapole in Bangladesh and Petrapole in India. This is an attempt to reduce the road link burden besides cost reduction of transport and facilitation of 7 lakh tones of trade per day. Apart from this, Mahanagar Telephone Nigam Limited (MTNL) has had a liaison with World Tel for offering basic telecom services in Bangladesh. This would incorporate installing, maintaining and managing the entire system. Investment of \$ 300 million in current fiscal year of 2001-02 for expanding its overseas operations has been planned.

TRANSPORT LINKAGES OF BANGLADESH



- International Boundary
- District Boundary
- River
- Metalled Road
- ⊙ Capital with International Airport
- ⊙ District Head Quarter
- City

Bangladesh plays a vital role into geo-strategic milieu with India. We have to ensure that it does not fall into the game plan laid by Chinese. It is also a member of Ganga-Mekong Project and Asian Highway project.

India has used the means of transport and communication as a geo-strategic tool with all the neighboring countries to polish its foreign policy measures but this measure has always been taken as a contingency measure but not as a predictive or foresighted measure. India has always strengthened its geostrategic position only after crisis be it the Chinese aggression in 1962 or the Kargil aggression in 1999. The foreign policy measures along the transport and communication lines should be geo-strategically induced keeping in mind that further military aggressions should be avoided and that we are prepared against any further aggressions by having a geostrategic upper hand.

CHAPTER V

NEW HORIZONS OF SCIENCE AND TECHNOLOGY AND THE CHANGING GEOSTRATEGIC PARAMETERS

In the 21st century, geostrategy in India's Northern Sector has new horizons to be ventured. The new horizon is an economic, scientific and technological approach unlike the traditional approach of domestic military retaliation post military incursions which India had maintained in the 21st century towards its hostile neighbors. It has to be understood that when military moves fail, weapons of diplomacy and geography have to be used because these weapons would definitely curb the latent tensions immediately. Following are new geo-strategic approaches that open new horizons into dealing with the vulnerabilities in the Northern Sector.

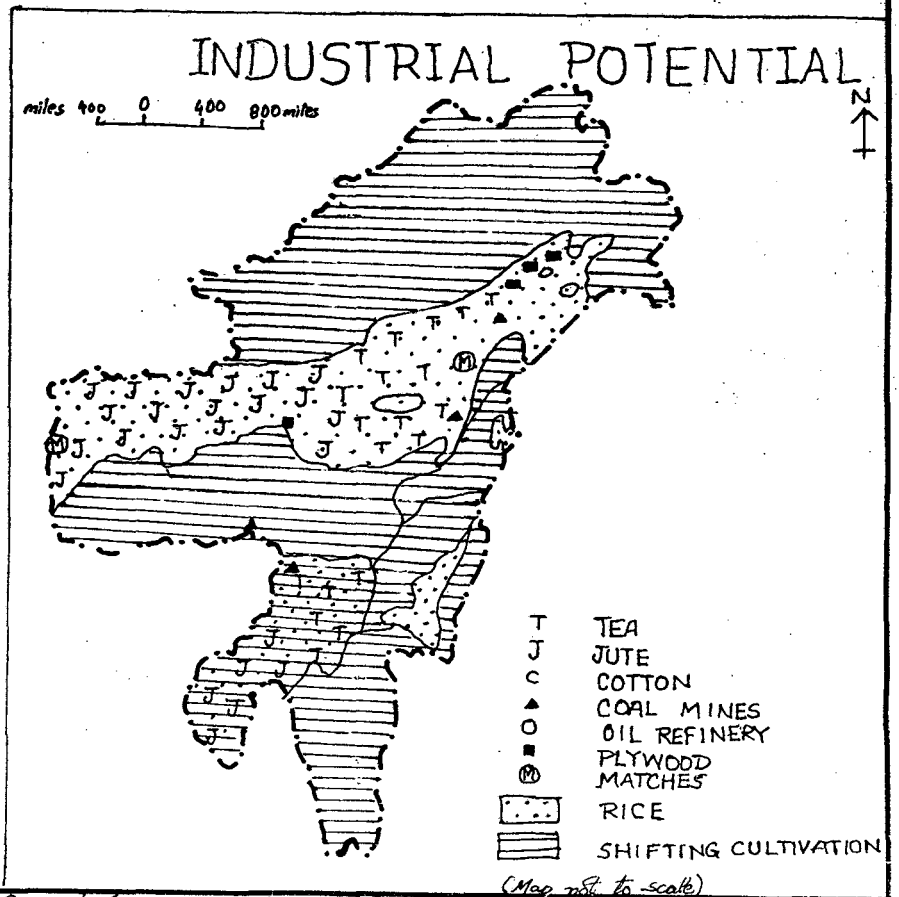
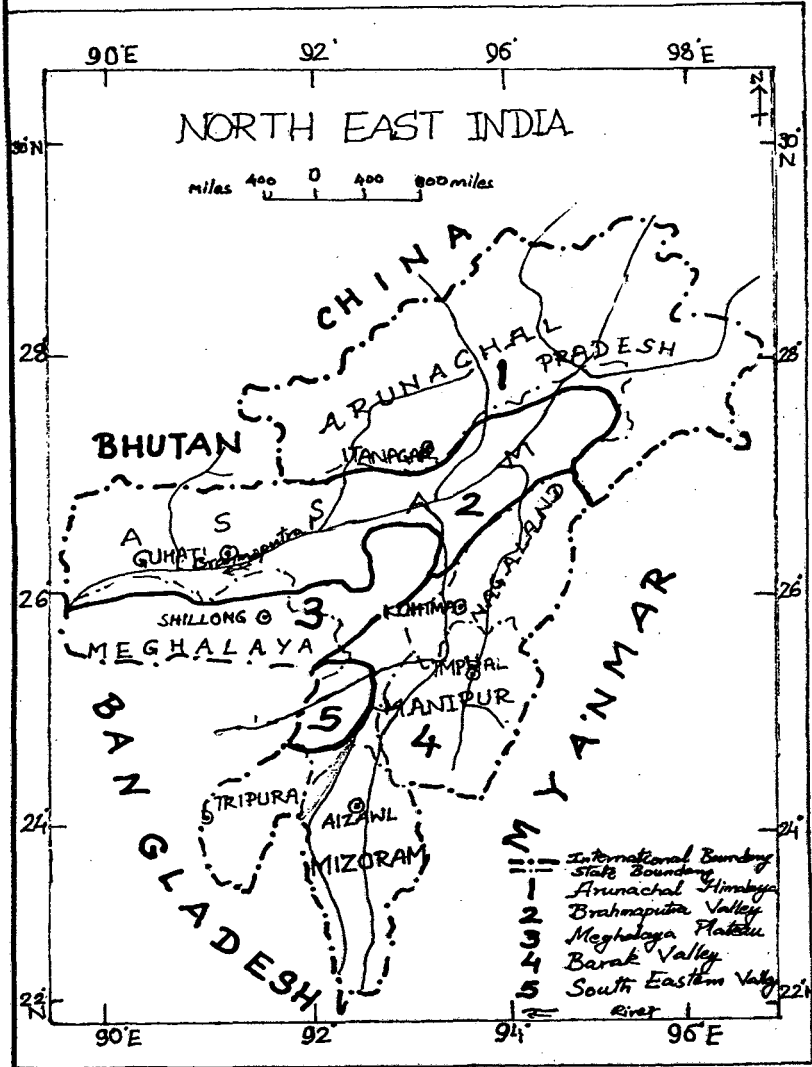
D) NEW HORIZONS IN GEOSTRATEGY- An Economic Approach: This is an indirect and most talked about geostrategy but is hardly implemented due to geo-strategic bottlenecks of implementation and domestic political initiatives. According to this approach, the standard of living of the people should be raised by regional development and employment creation in Northern sector such that the feeling of territorial, economic, social and cultural isolation is immediately erased and patriotism takes an upper hand strengthening the Northern Sector and minimizing the threat perceptions from the neighboring countries. A case study of the Northeastern states in the

Northern Sector depicts how a potential territorial incursion by the neighboring countries in the Northern Sector can be controlled.

A CASE STUDY OF NORTH EAST STATES OF INDIA IN THE

NORTHERN SECTOR: - The north-east states in Northern Sector of India is a region of vast potential especially in terms of forest, mineral and agricultural fields. The aspect to be considered is that this area is industrially very undeveloped and unexploited inspite of the abundant wealth of national resources. This gives a direction about the industrial potential of this region. The reason for the low industrial development is to the geographically isolated locations of northeast states of the northern frontier right form the early British times. Only 42% of the population is involved in the industrial sector and this indicates that if the industries tap the unexploited natural wealth of this region , then this region can really gear up into progress and rapid development within no time. In comparison to the other areas, the industrial development in this region is insignificant. Among all the states of northeast, Assam is much developed in terms of industrial set up especially dealing with large-scale industries such as petroleum, paper, sugar and cement industries. The prime target of Government of India aims at making this region industrially active and thus, many different programs and packages are being chalked out and case studies have become vigorous. We can point out the slow industrial development of the region of northeastern states of India by the following reasons: -

INDIA'S NORTH EAST POTENTIAL



Source: Long Excursion Report, B.A. Geography (Hons.) III year, Kivori Mal. College, 1996.

- Inadequate infrastructural supply of flow of transport and communication.
- Lack of infrastructural facilities in terms of supply of electricity.
- Lack of financial support.
- Lack of initiative in dynamic enterprise even from private sector.
- Unavailability of inexpensive labor.

All these factors are making and have made the slow pace in industrial development. Much attributes to the isolated location and difficult movement in northeast region. However, the industrial potential is being harnessed and this stands as a topmost priority. The industries of this region can be grouped into 3 categories: -

- a) Large-scale industries (Agro Based Industries): - Tea, Petroleum, Paper, sugar Jute and Cement.
- b) Medium Scale Industries (Mineral Based Industries): - Plywood, sawmill, chemical, Motor-works, printing work, Rice Mills, First processing.
- c) Small Scale Industries: (Forest Based Industries) - Sericulture and weaving care and bamboo work pottery, black smithy, carpentry, block making, furniture making and handicrafts.

Along with less population the northeast India has a large potential resource, which is not developed. If the industries are developed here, large

amount of population will get employment and this will improve the standard of living of the people, which will in a direct way contribute to the increase in National capital. The following industries have been scrutinised in order to access the industrial potential and prospects.

- **TEA INDUSTRY:** - Tea industry in the northeast India has, proper conditions for the plantation of Tea and this is because of the mountainous terrain of the area. Tea industry is confined to only a few districts of northeast India like Lakhimpur, Dibrugarh, Sibsagar, Cachar etc. At present there are about 707 tea gardens in Assam and 50 gardens in Tripura. If this industry could be expanded this will give promising results in the field of good quality tea production.

The main problem of this industry is small size plantation, disarrangement of proper drainage, lack of transport and communication, non availability of adequate finances and less competition with other countries. The regional economy is reflected by the kind of industrial set up especially of small scale industries. These industries offer scope not only for self-employment but also help in improving the economic condition of the people and this is the best possible advantage of these countries as finances involved are very less than that of weaving. Only manual labor is needed as the fundamental base to develop on this and is required to make a product. Research work done in cottage industries and handicrafts development for tribal people would foster speedy development of the tribal masses.

- **SERICULTURE AND WEAVING:** Sericulture and weaving is the important industry in the north-eastern India. Sericulture involves the rearing of silk cocoons, which are fed on leave of mulberry trees. The people of Sumar, Shangpung, Saipung, Mynso, Umpanai, Um Mynso, Bhsi Lalu, Bhsi Khywang, Bhsi Kai and other people of the Khasi hills used to rear cocoons and make weaving their occupation. There has been a monopoly of weaving in the Jaintia Hills of the Nongtungs and Khyrhangs. Raw materials cum sales are made available for the village industries. Sales depots have been established at Shillong, Jowai and Tura. These depots provide raw materials to the villages and help them find a market for their finished goods. Industrial estates are being developed at Shillong and Burnihat in that Khasi hills and Mendipathar in the Garo hills.

Impediments in handloom and weaving industry grip the northeast region. The people in northeast region do not get appropriate remuneration for all the effort they have put in for the handicrafts and weaving. The workers are not recognized, appreciated, encouraged and promoted for their immaculate efforts. There is no co-ordination in their work. All the work is scattered in the sense there is disintegration of labor, which makes the work to be inefficient. The company flourishes only with organization.

The people cannot compete with outside world because their quality of material used is not up to the mark. These people cannot afford to buy in the

price demanded by the competitors. The work is done erratically and because it is manual work, there is tremendous procrastination. The amount of output by the people is very less. They cannot produce in bulk and thus the bulky demands of the market are not met. There are traditional methods of working and these old means of infrastructure causes inefficiency of work. Proper drainage, lack of transport and communication, non-availability of adequate finance, less competition are a few impediments faced by this industry.

- **PETROLEUM INDUSTRY:** The efforts should be made to find more oil wells as it is expected in this region. Few more oil refineries have to be developed in this region. Assam has got numerous oil refineries (such as Digboi in Assam)and if more research and efforts are done in this field then this region will become financially better off thus also raising the standard of living of the people.
- **CEMENT INDUSTRY:** The cement industry plays an important role in the development of other industries in northeast India as this region has a vast resource of limestone, coal and clay, which is the main source of raw material for cement industry.
- **PAPER INDUSTRY:** Paper industry has got a vast potential to come up in this region as there is abundant bamboo lying unexploited in the forests. This region has all the facilities and conditions for the development of this industry but the main set back is that proper planning has to be done and there are possible chances for the emergence of this industry.

- **SMALL SCALE and COTTAGE INDUSTRY:** The regional economy is reflected by the kind of industrial set up especially small-scale industries. The industries offer scope not only for self-employment but also help in improving the economic condition of the people and this is best possible advantage of this industry as finances involved are very less than that of weaving. Only manual labor is needed as the fundamental base to develop on this and is required to make a product. If research work is done in this region then the tribal people can elevate their living standards by encouraging cottage industries and handicrafts about which the tribal people are already talented.

The states of West Bengal and Bihar are rich in forest resources, commercial crops, jute, sugarcane, tea, market gardening and dairies. It is rich in coal, iron manganese, mica bauxite, chromite and limestone. Its industrial potential resources are diversified with coal, metallurgical iron and steel, heavy machine building fertilizer, petro-chemical, jute, glass and food processing (tea) and textile.

Punjab, Rajasthan, Himachal Pradesh, Delhi Jammu and Kashmir are the most promising potential agricultural zone especially in the Rajasthan canal area is another potential area where reclamation through forests and irrigation, scientific farming, animal breeding, pasture, wheat, pulses, millet, sugarcane and horticulture is common. Actual production specialty is its highly irrigated agricultural, wheat, cotton, fodder crops, highly developed

livestock area, millet, oil seeds, sugar cane and horticulture in hilly areas. The potential industries in this region are agro-based industries, hydropower industry, wood, chemical, wool, silk, non-ferrous metallurgical, chemical, cement, ceramic and light engineering. The actual production specialties of this region are that in cotton, wool, silk, chemical small-scale industries and engineering.

Uttar Pradesh and Uttaranchal states have potential intensive cultivation, rice, wheat, sugarcane, pulses, and reclamation of land for future production. Actual production specialty is in intensive agriculture, sugarcane, oil-seeds, and pulses. Kanpur is the major industrial area where famous, metallurgical heavy electricals, paper, textile, leather and glass industry is dominant.

Gujarat caters to the Ahmedabad-Baroda industrial region where textile, petrochemical, engineering, automobile and atomic energy are the actual productions and future potentiality of mineral resource are that of cotton, peanuts, sugarcane pulses and millets. Gujarat is an extensive cotton-growing area whose livestock, peanuts and millets are actual specialties.

Hence, having a panoramic understanding regarding the industrial potential of the states in the Northern Sector, economic development must be fostered through various employment programs such that industrial development would compel the transport and communication network to

satisfy its chief purpose of fostering regional development and national integration.

II) INFORMATION TECHNOLOGY APPROACH- A Geostrategic

Military Dimension: The Indian Army is the III largest army in the world in operating in throughout the length and breadth of Indian which is the VII largest country in the world with a gregarious topography ranging form the perma-frost Siachin glacier, to that of the desert of Rajasthan- to the dense forests of northeast- to that of the metropolitan areas, the structure of the Army is 6 layered and to manage this Herculean structure, the means of transport and communication, play vital role.

Unlike the typical 20th century wars, the nature of in 21st century wars would be globally lethal and technically automated. With the information revolution as the technological base, the aerospace as a battle ground warfare has taken a new dimension with weapons of stupendous magnitude like that of nuclear weapons and missiles and chemical weapons, territorial encroachment has become facilitated within a few hours and fighting a future war would be on the basis of C4I2 system.

A C4I2 system is Command, Control, Communication,

Co-ordination, Information and Interoperable System. It consists of automated electronic structure where execution of strategy would be electrically planned, directed and controlled such that the mission is

accomplished with advanced means of communication procedures, equipment and facilities. Devised by Col. John Boyd of United States Air force, the C4I2 constitutions of 2 loop systems namely SCORE LOOP that is Sense, Compare, Order and Execute loop or OODA loop that is Observe, Orient, Decide and Act. This is a time sensitive loop where main victory lies in remaining ahead of an enemy vis-à-vis time.

The victory lies in finding out the attackers global positioning and then combat him by occupying advantageous position. A C4I2 system would be a complex task therefore a war system has been divided into two levels: -

1. STRATEGIC SYSTEMS: - This system has a control over strategic weapons and strategic forces are monitored against the defence of this system. These systems were that of the cold-war period when an Inter-Continental Ballistic Missile launched from one country would hit the other with a strike time of 1/2 hour to 2 hour and its counter attack was done by the orders of the President. The President has final authority to pass the counter-strike code to these systems, A C4I2 system if failed, the defence upon the enemy becomes deactivated and a number of counter attack weapons would implode within the ground itself. The C4I2 weapon system is also known as 'Force Multipliers' and has become very essential in the defence apparatus. India also needs such a C4I2 command system at a national level such that a combined effort of all the resources can be directed against the aggressor.

2. OPERATIONAL and TACTICAL SYSTEMS: This is the intensified system and has violent level of operations and hence correct decision making becomes an imperative. Future wars would include high mobility of operations with rapidly changing situation and would involve a high magnitude of destruction. C4I2 system would in turn become force multipliers. Here decision-making would be a time-sensitive phenomenon. Operational and Tactical systems foster faster requisition of data collecting (by collecting data from all space and ground sensors), processing and retrieval information for planning, monitoring and assessing the threat analysis would become accelerated. This can be possible by equipments like:(BFSR)-Battle Field Surveillance Radar,(EW)- Electronic Warfare),(RPV)- Remotely Piloted Vehicles. These are further divided into:

- a) COMMAND INFORMATION DECISION SUPPORT SYSTEM: - This is an integrated data networking system with a web of computer servers and terminal stations at each Head Quarter from corps to Battalion Head Quarter.
- b) Telecommunications play a vital role here as they provide the chief transport means of information between various Head Quarters. The strategic use of telecom will be confined to net-radio-relay. Seamless data communication with various types of media like satellite, radio, and microwave is needed to link army Head Quarters to battalions.

c) ARTILLERY COMBAT and CONTROL SYSTEM: - It is a computer based data network to enhance to response force artillery fire. 'Project Management Organization' is developing it under the Ministry Of Defence

d) BATTLEFIELD SURVEILLANCE SYSTEM: - This system consists of sensors and data fusion system such that an effective time sensitive picture of the enemy could be developed this system is still to be developed.

e) OPERATIONAL AIR SUPPORT SYSTEM: - This system aims to integrate air force operations in ground operations.

f) AIR DEFENCE CONTROL and REPORTING SYSTEM: - Here a control system and command system for air defence would be set up to counter attack enemy's aircraft and missiles and this system is yet to be developed.

g) C3I2 SYSTEM AT BRIGADE FIGHTING LEVEL: -The aim of the system is to provide seamless data communication from highest level to fighting level. Here, the problems of automation increase. The media of communication is that of the radio and data communications could be provided on radio using internet controller, tactical multinet-gateway and automatic network manager.

3.Warden's Five Ring Theory: - This theory was advocated to level by Warden by United States Flying Academy and was put effectively into operation during the gulf War in 1991. This swarming concept dates back to that of 12th century demonstrated by Mongols. Col. Warden had enabled this 5

Ring theory by aerospace power and leadership of the president, with the organic essentials of the army, information technology as infrastructure. Here, population will be the system controllers and as a result fielded forces would be reduced thus minimizing the casualties.

The combination of the above tactics would lead to strategic paralysis of the enemy. Information technology today has reached new horizons, which were beyond imagination few years ago. There are weapon systems today with its strike rate of unprecedented precision. There are missiles, which are digitally monitored and can hit a target as of far as 1200 km.

In the 21st with developments in computers, Precision Guided Munitions (PGM), satellites and information technology and that of software programming information warfare has become a new threat. These developments instigated revolutionary weapon designing concepts, air and space platforms and information exploiting means through networking and would have an enormous impact on the nature of international relations in 21st century apart from military, economic and political dimensions.

4.A JOINT WARFARE MODEL: - A paradigm shift, has occurred in the modus operandi of warfare from land centric approach to non-terrain approach of that and sea. Now land, air and sea have equal major roles as a battlefield. A Joint Warfare Model is based on global positioning system (for precise navigation), space based sensors (for real-time information), aerospace

communications (where information and decision making capabilities have been revolutionized).

It has to be understood that throughout history so far, conflict has been an inherent part of civilizations and the chief cause is change in balance of power among nations. The factors that contribute to the vicissitude in balance of power are wealth, territory, military power and technology (weapon technology). At present the information revolution has brought about and a technological revolution in Aerospace. Aerospace is fusion of development in aviation, space, computers and communications. The integration of communication and computers or information technology has led to information revolution. Hence there has been a paradigm shift in the nature of future wars and international relations.

For India, the information revolution has given the opportunity to leapfrog over many developmental processes as we have missed information revolution and we can ensure that we would maintain freedom of action both in space, air and on ground. India is an emerging major power as it is only 53 years old and has to consolidate itself as an effective strong state. The geographical pivot in the 21st century is getting concentrated in the strategic triangle of India, China and Russia, this is because: -

- a) At present there is fastest economic growth in Asia and the growth patterns of India and China would have major global impacts.

- b) Asia would be a vast dynamic economic market, as the ongoing information revolution would be transforming the economic standing of Asia.
- c) The stupendous population of China (1,276.3m) and India (1,006.8m) would transform into massive human resources bases by exploiting the easy access to knowledge and education enabled by information technology.
- d) Indian Ocean zone would become a very critical zone in 21st century as 70% of maritime trade passes through the Indian Ocean and India's Exclusive Economic Zone is likely to become a source of competition for oceanic resources.
- e) By next decade Asia's Gross Domestic Product will be surpassed than that of the West. Political Instances from the past have equated that military power has been equated with national power but in the 21st century, national power would be equated with Aerospace Power. Aerospace power can be defined as a 'synergistic application of air, spaces and information systems.' it has many fold economic implication such as telecommunications, remote sensing, computers and communications, weather monitoring, Global Positioning Systems, education and commerce and satellite communications.

Economic investments in the aerospace sector are increasing many folds. At present with 600 active satellites in the world (70% made of US, Russian and erstwhile USSR origin) and by 2010 out of which 60% will be from countries other than USA and Russia. There has been an exponential space of development in information technology in the last decade. Over 1100 companies in 53 areas are engaged in space research, development and manufacturing activities. The total revenues from aerospace sector are about \$ 125 in US and are expected to increase to \$ 600 to \$ 800 billion and by 2015 it would hit \$ 3 trillion.

Military implications in Aerospace technology would be that of Information, Command and Control, Precision and Penetration along with aerospace technology. With aerospace technology, the use of chaos and complexity theories would simplify with help of data processing. Aerospace power affects the international relations at three levels, namely Military Technology Revolution level, the impact generated (both national and international level) and the revolution in Strategic Affairs. Thus international relations would focus on the emergence of strategic information warfare concept by identifying and functionally destroying the aggressor by using information warfare.

III) GEO-STRATEGIC IMPERATIVES OF AEROSPACE POWER AND ITS IMPLICATIONS FOR INDIA: Keeping in mind that Aerospace power is becoming an essential component of National power in the 21st century, aerospace capability of a nation would become a critical instrument

of national security and India being an emerging power would have to be equipped such that its security, strength, technological and economical advancement is not jolted.

With India present (conservative) growth rate of 6%, India's GDP is estimated to be \$ 4.16 trillion in 2015 which is 1/3 of the US economy highly skilled manpower and would help India catapult over the development debacles and be at par with other advanced nations such that India could become world power. At present India has consolidated itself as a regional power. Thus threat factor is that if India does not become an aerospace power, its technology would be obsolete that would result in its economic and cultural exploitations apart from technological and military coercion from established powers. At present, aerospace power is unexploited and that the future trend of wars is going to be that of circumterrestrial space of an altitude of 50,000 miles (approximately) and commanding the L4 and L5 (lunar liberation points) in outer spaces (lunar liberation points are locations of equal gravitational pull of moon and earth and of military bases planted here could be longstanding and cost-effective).

With the above approaches, geostrategy in Northern sector should be remodelled suiting with the economic status of the states in India's Northern Sector and developments in science and technology by keeping pace with the political and territorial designs of the neighboring countries of India's Northern Sector.

CHAPTER VI

CONCLUSION

“When the world thermometer registers “not war not peace” it is hard to decide whether to follow military judgments or political judgments”.

-John Foster Dulles.

The Republic of India got punctuated with gregarious cultural economic and political debacles ever since it has emerged as an independent country in 1947. India's reluctance in considering the geo-strategic imperatives of transport and communication in the northern sector has already caused India a grotesque loss of territory. The British left India with a legacy of border skirmishes the Sino-Indian border dispute on one hand and Pakistan advancing its designs on Kashmir and Bangladesh via the porous international border on the other. The territorial incursions upon India have pointed that our transport and communication network is to counter the geo-strategy of our hostile neighbors.

The dawn of 21st century approaches the Republic of India to review its geo-strategic moves according to its network of transport and communications. Any further incursions would be to India's incapacity to exploit the means of transport and communication to foster nationalism in the external most territorial limits of the India's Northern Sector. The Chinese had an advantage over India in 1962 due to the road they built in Askai-Chin area. As a result India had a setback and not until then NH1-A was created such

that the Askai-Chin episode must not be repeated. Again in 1999, the Kargil sector incursionists wanted to disconnect the NH1-A and advance over the Ladakh, Kargil and other areas of Jammu and Kashmir along NH-1A. Means of Transport and Communication are instruments for economic development. Trade can only be fostered if there is an uninterrupted flow of goods and services. Also this vital means would strengthen nationalism and can counter the territorial handicaps of difficult terrain for free movement.

India should understand that a strengthened Transport and communication along the border serve the dual purpose of not only guarding the Indian territory but also building the roads of friendship with the neighboring countries. Innovative projects such as Project Dantak in Bhutan and Indo-Myanmar Friendship Road coupled with the Gujral's "Look East Policy" would develop north-east India and would arrest the growing unrest and territorial isolation among the tribes of the north eastern states. The landward opening of northeast India would immediately change the economic standard of the northeast states for the better and would make "Look East Policy" a major success.

India must undergo a paradigm shift in its foreign policy undertakings. Foreign policy must have a scientific approach. A scientific enquiry¹ can be displayed in foreign policy along the following lines:

¹ See Rosenau J.N, A Scientific Study Of Foreign Policy, London,1980.

1. To avoid being conscious while task dealing and formulating a foreign policy.
2. To be clear in choosing a theory for underpinning a theory for foreign policy.
3. To be able to assume human affairs have an underlining order.
4. To be able to integrate every event, situation or observed phenomenon with the territorial incursions in the border states.
5. To let go detailed descriptions for broad observations such that irritants can be overlooked for building confidence building measures.
6. To be sportive about international phenomenon in the bordering countries of the Northern Sector.
7. To be concerned regarding probabilities, truly arrayed by international phenomenon.
8. To be ready to be proved wrong.
9. To be enduring regarding vagueness and misleading absolutes and to be more concerned regarding probabilities.

The debacles of foreign policy can be erased if a scientific enquiry is made due to its reliability and its conclusions are unquestionable. The relevant circumstances are tested by saving historical groups undulated by the number of cases for having identified the problem dimension which is navigated by broad assessment. Here, the margin of error is less. Also, scientific foreign policy would repair the diplomatic damages of the past and

would foster a friendly environment among the countries surrounding the Northern Sector.

In India transport and communication is yet to be developed keeping in mind its size and population but this development must commence from the states in border region to southward India. The Golden Quadrilateral Project promises us a better connectivity and would also ensure cross-ventilation of nationalism from all directions especially in the northeastern states of the Northern Sector and a free flow of nationalism would minimize the anti-national sentiments. India has to understand that the chief cause of underdevelopment and unemployment in the Northern Sector is mainly due to the improper, insufficient means of transport and communication.

It is to be understood that India being the VII largest country in the world would lose territorial status if we keep succumbing to territorial incursions by our neighbors by not guarding the borders in the border states of India. Strengthened means of transport and communication fosters nationalism and development which is a natural weapon against any territorial encroachments.

It has to be seen that territory is a fixed concept unlike population. India surrounded by Islamic countries like Pakistan and Bangladesh must understand that the population pressure over territory would have spill over effect into the Indian border. Boundaries and border problems such as trans border terrorism and illegal migration would eventually pressure economic

resources and domestic employment opportunities will crop gradually leading to, territorial encroachment. Keeping in mind an “ eye for an eye and a tooth –for-a tooth” policy geo-strategic moves of India should be matched according to geography, history and anthropology of the countries bordering India’s Northern Sector. A holistic approach should be implemented to solve border problems with immediate attention. Transport and communication is a vital factor for any country and at any stage. If India suffered a setback in 1962 Chinese aggression then it is because of the fact that our Northern Sector was not well equipped with the means of transport and communications. What Nehru considered Askai Chin as a wasteland, China considered it as a geo-strategic position (that gives Chinese a military upper hand to over India)

The 21st century has undergone a paradigm shift in military geo-strategy for this is an era of aerospace where (Inter Continental Ballistic Missiles) ICBM has changed the contemporary world order. India must move up the missed industrial revolution by using the geo-strategy of information warfare and should be ahead in devising anti missile technologies along the lines of National Missile Defence of the United States. The great national relevance of aerospace power is incontestable for it is going to become the most critical element of national power. It has to be understood that the battlefield of the future will shift to outer space (50,000 miles of altitude) by virtue of aerospace power. The geo-strategic imperatives in 21st century would be that of information dominance and information denial along with space

control and space dominance. These imperatives via the means of communication would be the key to domination by the aid of 21st century.

Hence it could be concluded that the geostrategic imperatives have stretched its horizons from traditional terrain based network of transport and communication to that of a wireless network into outer space moving geostrategic undercurrents along the following lines:

“ Who rules the circumterrestrial space commands the planet Earth.

Who rules Moon commands circumterrestrial space.

Who rules L4 and L5² commands the Earth –Moon system.”³

² L4 and L5 are lunar liberation locational points in outer space where the gravitational pull of the moon and Earth are exactly equal. It is theoretically believed that the military bases planted there could be cost effective and minimize fuel consumption in outer space because these are stationary positions.

³ See USI journal.

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