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Contact Us
Editor, Journal of Indian Research
Mewar University
Sector-4C, Vasundhara, Delhi-Gzb. Link Road, Ghaziabad-201012 (U.P.)
Phone : 0120-4758300
E-mail: jir@mewaruniversity.org, Website : http://mujournal.mewaruniversity.in

Abstracts and Indexing
http//nkrc.niscair.res.in/

Design & Production:
Samvad Media Pvt. Ltd.
E-mail:media.samvad@gmail.com
Ph: 011-23517803

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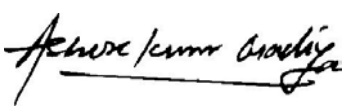
CHAIRPERSON'S MESSAGE

India is on the cusp of transformation. The lull in policy making squeezed out the vigorous activity in different sectors. A new government will have a long list of tasks to accomplish. The dynamic recovery of economy will be the foremost challenge. Indian foreign policy lies in tatters. The world is changing fast and there is major reconfiguration of power underway. Russia is flexing muscle westward and southward. The redrawing of political boundaries in the Eurasian heartland is on the anvil. The US has reinvigorated its military machine in the Black Sea and the Mediterranean. On the other hand, China-Japan relationship has nosedived. There is fear of massive escalation of tension between East Asia's top most powerful nations. India's tilt towards bilateral trading arrangements with Japan & South Korea will be a challenging task in such a scenario. On the other hand, withdrawal of US troops from Afghanistan will have a negative consequence for India, if the paradigm of governance in Af-Pak region doesn't change for better.

In such a fluid and complex external environment, Indian foreign-policy has to walk a tight-rope. By following the non-alliance principle, a multi-vector policy has to be pursued. India's new motto of governance ought to be *'inclusiveness'*. This should be practiced both at the domestic level and in the external environment.

The current issue of the Journal of Indian Research deliberates upon 'inclusiveness' as a theme within SAARC. There is a full-fledged study on inclusive education conducted under the aegis of Deshkal Society, Delhi. The highlight of the issue is a theoretical contribution by Professor Yan Xuetong, the foremost Chinese thinker on International Relations and the Sriyantra Model as the grand strategy for rebounding India by our Editor, Niraj Kumar.

I hope many of the papers in the current issue will provide fresh inputs for the new government. I extend congratulations to the editorial team for completing time-bound stupendous task.



Dr. Ashok Kumar Gadiya

EDITORIAL

Can Indians think? Few years ago when Singapore's Indian-origin diplomat-scholar Kishore Mahbubani published a book, *Can Asians Think?*(1998), a healthy debate ensued between votaries of Oriental glory on the one hand and Oxbridge paradigm on the other. But, the issue must be settled at the highest level of existing political organization i.e. nation-state. India is known as the progenitor of world's major religions. Hindu philosophy has six principal systems- *Sāṅkhya, Yoga, Nyāya*, *Vaiśeṣika, Mīmāṃsā* and *Vedānta.* There were 18 schools of thought in early Buddhist philosophy. In the realm of aesthetics and linguistics, arguments and counter-arguments by the sage-philosophers vivified the culture of thinking. Chandrakirti and Chandragomin of Nalanda argued tirelessly for seven years on pros and cons of *cittamātra* doctrine. But, a land enriched with such a high standard of thinking and debate has made marginal contribution to the treasury of world knowledge after becoming Republic. This lacuna is amply demonstrated during the ongoing elections. Hardly any programme for revival of nose-diving economy or healthy foreign policy has been discussed in public sphere. The TV debates are trite and scandalous. The anchors are outlandish and behave like omniscient tyrants. Most of them try to outsmart the guests in slanging match. Trivial issues grab headlines. If an alien observer happens to pass through India, his view about contemporary Indian public intellectuals might annoy the *mahants* of academics and research institutions.

The sad affairs of thinking in India can be gauged from the fact that there is hardly any Indian perspective forthcoming with Indian characteristics in the field of economics, foreign policy, management, political philosophy or even literary theory. Most of the TV hop scotching "scholars" has been groomed in the lands beyond oceans. They are at ease with non-Indian languages and exclusivist in approach and method when it comes to incorporate indigenous categories in their thinking processes. The problem lies in the excessive indulgence with "analytical" tradition of the west which creates an exclusivist approach towards life and the world. On the other hand, dominant theme in Indian tradition of research has been "synthesis". Sanskrit terminology for research is '*anusaṃdhān'*. It is derived from the root *"sandhi*"- to join. The analytical tradition (*adhyavasāyā*) in India could not capture the popular imagination due to its exclusivist approach and hence research has become synonymous with synthetic approach(*anusaṃdhān).*

In fact, *inclusion* is the major theme in Indian civilization. Even the opposite categories are not to be excluded and a "*sandhi*" is established by using *bimba-pratibimba* model. The festivals are the "*parvas*" which join (*parv*) different slices of cyclic time. This inclusiveness (*anuvṛtti*) derived from Indian tradition of synthesis must be the defining characteristics of our times reeling under the attack of westoxified, elitist and exclusivist chieftains of institutions of excellence. Imposition of a worldview rooted in rational, secular ontology and exclusivist (*vyavṛttimulaka*) approach ought to be discarded and replaced with synthetic (*anusaṃdhānatmaka)* ontology.

The highest level of policy making for a state is often termed as 'grand strategy', which is a holistic and synthetic way to realize national interest and its core values. The current issue of the journal is publishing a Grand Strategy with Indian characteristics. We have an excellent intervention from Professor Yan Xuetong on "Bipolarization of East Asia". Scholars from Dhaka University, JNU and Jamia Millia Islamia University have enriched the issue with their explorations on international situation. Geetika Kaw Kher's paper on the history of Vajrayana is novel and lucid. Research scholars from Mewar University have contributed well documented papers on education, management and technology. Sanjay Kumar has contributed a significant work on inclusive education. The theme of 'inclusiveness' runs through the current issue. We are hopeful that more and more scholars and chieftains in academia will shed their exclusivist tendencies and join in the unfolding of the spirit of *anusaṃdhān*, the all-encompassing ethos of 'inclusion"

– Niraj Kumar

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IR Theory

THE BIPOLARIZATION IN EAST ASIA

Professor Yan Xuetong*

EDITOR'S NOTE

This is the speech delivered by Professor Yan Xuetong during Asian Security Conference, 2014 on "Emerging Strategic Trends in Asia and India's Response" organized by the Institute for Defence Studies and Analyses (IDSA), New Delhi on 19th February,2014. Upon our request, he has forwarded the paper for publication in the Journal of Indian Research. Professor Yan has been ardent supporter of revaluation of major power relationship. For him, the main question of contemporary international relation is whether the competition between China and the US will result in a disaster as often happened in history when two great powers collide; the second issue is whether it's possible for China to become a new superpower peacefully; and the third issue is whether China will behave like the historical hegemon, a tyrant or will it be a new kind of humane authority based upon winning hearts and minds of people. He has proposed the idea of Superficial Friendship rather than Superficial Enmity as the major power relationship paradigm characterizing relationship between China and the U.S., which consists of a healthy or peaceful strategic competition. In the future, major powers will need to deal with more conflicts between them, rather than less. To manage the situation from worsening, Professor Yan suggests a Football game model in managing conflict rather than Boxing match analogy for international relations, in which competitors clash within a set of rules without causing much harm. Unlike Boxing match, in Football game; violence is not the primary means of interaction. He compares the Cold War competition between the United States and the Soviet Union to a Boxing match, and the current relationship between China and the United States to a game of Football. In this paper, Professor Yan hopes that China and India will develop cooperative relations rather than this new model of major power relations because the nature of the former is cooperation and the nature of the latter is competition.

Keywords: Bipolarization, competition, major power relations, multipolarization, rebalancing strategy, Trans Pacific Strategic Economic Partnership (TPP).

"Multipolarization" has been a buzzword since the collapse of the Soviet Union in 1991. However, the advocators for multipolarization have not currently identified any power possessing a nationally comprehensive strength which is similar to that of the United States. The financial crisis of 2008 dimmed the prominence of the U.S. as the only superpower but it still did not bring about any bright future for multipolarization. Since China's GDP surpassed Japan's in 2010, the term "bipolarization" has been an alternative forecast in contrast to the prediction of multipolarization. My latest book *The Inertia o/History: China and the World in the Next Ten Years* presented a structural analysis of the possible trend of bipolarization. It will be very possible for all major powers to adopt foreign policy according to that trend in a visible future.

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* *Professor Yan Xuetong* is serving as the Director of The Institute of International Studies, Tsinghua University, Beijing, China and the Chief Editor of The Chinese Journal of International Politics. He is the author and co-author of a number of globally-acclaimed books including *Inertia of History: China and the World in Next 10 Years* (2013), *The Analysis of International Relations* (2013),*Ancient Chinese Thought, Modern Chinese Power* (2011), *Practical Methods of International Studies* (2007), *International Politics and China* (2005).He is the most articulate Chinese voice on global politics.

Based on Deng Xiaoping's doctrine of "Keep a low profile, do something"(*tao guang yang hui, you suo zuo wei*), the Chinese government has advocated multipolarization for more than two decades. It is obvious that multipolarization would provide better conditions for China's interest in preventing American containment efforts directed against it. Nevertheless, the trend of bipolarization drove the U.S. to adopt a pivot/rebalancing strategy in East Asia in 2010. Some Chinese thought that the rebalancing strategy was merely a political technique used by the Obama administration for his election campaign, and hoped that the U.S. would still focus its strategy predominantly in the Middle East. Unfortunately, they were disappointed by Obama who clearly reiterated that the rebalancing strategy will not change under his administration. Faced with Obama's rebalancing strategy, China's new government, headed by Xi Jinping, changed China's foreign policy from the doctrine of "*keeping a low profile*" to the principle of "*striving for achievement" (Fen Fa You Wei).*

With regard to bilateral relations, Xi Jinping suggested developing a new model of major power relations with the United States. After hard diplomacy, the U.S. officially accepted this idea last November (2013) when Susan Rice delivered a speech at Georgetown University. This new model of major power relations between China and the U.S. is not characterized by a close relationship, but rather it consists of a healthy or peaceful strategic competition. The positive aspect of this agreement to establish a new model of major power relations is that it supports these two countries in working together while avoiding a repeat of the American-Soviet confrontation that occurred during the Cold War. The negative part of it is that in the future they will undoubtedly need to deal with more conflicts between them, rather than less. Personally, I hope that China and India will develop cooperative relations rather than this new model of major power relations because the nature of the former is cooperation and the nature of the latter is competition.

Most of the major powers including India have now adopted a policy to improve relations with China while managing their relations with the United States. In 2013, China further consolidated its relations with Russia, Germany, France and India while improving its relations with the United Kingdom. This phenomenon demonstrated that it is possible for most of the major powers to have good relations with both the China and the U.S. at the same time. Nevertheless, Japan could be an exception. The Japanese Prime Minister Shinzo Abe adopted a confrontational policy with respect to the rise of China. He has regarded China's rise as an opportunity for Japan to get rid of Article 9 of Japan's Constitution and thereby transform itself into a military power. For the sake of achieving that goal, he purposely designed an official visit to the Yasukuni Shrine which honors 14 A-class war criminals of World War II, and has also adopted a confrontational policy on the territory disputes over Diaoyu Island. Additionally, the Abe regime tried to justify the Japanese policy of "*comfort women*" during the World War II and also its colonization of Korea before World War I. It is increasingly obvious that Abe has no intention of improving relations with China and South Korea. It is very possible that during his governance of Japan, China-Japan relations not only will become much worse than those between China and the U.S., but also could well become the worst of all bilateral relations between major powers.

Because Abe is determined to intensify the confrontation with China, we cannot rule out the possibility that he would order Japanese troops to shoot first, in the event of an armed stand-off. As long as Abe is in power, Japan's rightist policy will be as dangerous as North Korea's nuclear policy. These two problems have already become the two most important threats to regional stability in East Asia, which has enjoyed peace since 1991 when the Cambodian war ended. China adopted the principle of peaceful development but that principle does not mean China will tolerate Japanese-initiated military attacks. According to various historical studies, the weak initiate military attacks against the strong no less often than the strong do against the weak. Historical examples include the Japanese Navy's surprise military strike launched against the United States' naval base at Pearl Harbor in 1941 and al-Qaeda's attack on the U.S. in 2001. When Abe's government works hard at organizing an ideology alliance aimed at containment of China, it is not a good sign for world peace.

The process of bipolarization does not only have impact on major power relations, but also on regionalization in Asia. Asian countries have experienced both of the recent major financial crises—during 1997-1998 and then from 2008- onwards. Bipolarization will intensify the competition between the American Trans Pacific Strategic Economic Partnership (TPP) and Chinese regional cooperation, Regional Comprehensive Economic Partnership (RCEP). The Chinese government has announced three plans for economic regionalization in Central Asia, South Asia and Southeast Asia. These plans involve the belt of the silk route in Central Asia, the economic corridor composing China, India, Bangladesh and Myanmar, and the maritime silk route in Southeast Asia. Unfortunately, Abe's confrontation policy makes it impossible to develop sub-regional economic cooperation in the Northeast Asia.

Nevertheless, the China-U.S. competition for regional cooperation will benefit many countries economically in Asia. China will provide more capital to surrounding countries for regional cooperation and the U.S. will provide more favorable policy for Asian countries to access to American market.

Due to the strategic competition between China and the U.S. and China-Japan political confrontation, it is very possible for East Asia to become the world center within ten years. To be the coming world center, Asia has to be the region where global competitors reside as well as be the most valuable place for them to compete. By 2023, the GDP of East Asia will be larger than that of the whole of Europe or North America. Meanwhile East Asia may also have more tensions than the latter two regions. I am not a fatalist and I think we still have a chance to make Asia better than I have forecasted. My optimistic attitude is based on possible policy changes by Japan after Abe. Based on the rate of changing Japanese prime ministers after the Cold War, Abe will not stay in power for more than five years. After him, the world will have a chance to see a different Japanese government—one that will admit Japanese crimes during World War II and will prefer cooperation rather than confrontation. In that case, we will at least defuse one of the two major danger problems of Asian politics and of the world; those being Abe's government and the nuclear issue in the Korean Peninsula.

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Strategy

BUILDING GRAND STRATEGY WITH INDIAN CHARACTERISTICS FOR REBOUNDING INDIA

Niraj Kumar*

ABSTRACT

This paper is an initial attempt to formulate a Grand Strategy for India by fusing the concepts taken from Kautilya's Arthashatra and Sriyantra, the epitome of India's triadic thought-structure. American grand strategy is symbolized by the image of spread-wing eagle and that of China by the Yin-Yang symbol. Sriyantra as a symbol for Indian grand strategy can complement these two symbols. Only by formulating appropriate grand strategy, India's national interest can be realized.

Keywords: *Arthashastra,* diamond path, eagle, harmony, mandala, *parabellum*, Sriyantra, strategic culture, strategic preference, Superficial Friendship Theory, Yin Yang.

INTRODUCTION

There is a veritable explosion of debates worldwide about grand strategy of major players. While the U.S. and China have been resettling their strategic focus in an uncertain and fast-changing post-western world (dis)-order, Indian think tanks have been struggling over the debate as to whether India has a strategic culture and how to formulate a grand strategy for India for the coming decades.

GRAND STRATEGY AND STRATEGIC CULTURE

What is a grand strategy? For imperial Spain, the grand strategy of maintaining colonial empire for own prosperity was control of colonies, gold bullion and its uninterrupted circulation in global market during 16th century. France utilized its comparatively large population to build huge standing army to retain mastery over the continent. Britain used the uninterrupted trade of tea, opium and bullion across the global supply chain to derive primacy. To safeguard the global trade, it built a strong navy on the strength of solid industrial base, while followed the strategy of maintaining the balance of power in Europe. This prevented any continental power to unite Europe and build a fleet strong enough to challenge British supremacy in the sea. Britain used every means and successfully prevented emergence of any hegemonic power in Europe for more than a century.

The U.S. inherited the global hegemony, British possessions as well as the grand strategy from the British after the end of the Second World War. The U.S. built strong navy to control the sea and ensured that no hegemonic power emerge in Eurasia. The US followed the grand strategy of 'containment' against the Iron curtain of communism. This was a catchy phrase though effectively it was the old 'balance of power' strategy whose theatre was made wider from Europe to Eurasia. Creation of rimland alliance and taking benefit of Sino-Soviet split to effectively end a strong hegemonic

* **Niraj Kumar** is the Editor of Journal of Indian Research and author of many books. His recent publication includes *Sriyantra and the Geophilosophy of India* (2014). Two books, *Rainbow of Indian Civilization* and *Asia in Post-western Age* are in press.

contender, Soviet Union, was based upon this grand strategy.

Barry Posen succinctly puts grand strategy as "a state's theory about how it can best cause security for itself."[1] While earlier western writers on strategy focused more on military aspect of security, the non-military aspect was often ignored in formulating the grand strategy for a state. The foremost western exponent on military strategy, Carl von Clausewitz in his magnum opus, *On War* (*Vom Kriege*)(1832), explained strategy as the use or threat of force "to achieve the military objectives, and by extension, the political purpose of war."[2] But, it was the British war historian Basil H. Liddell Hart who introduced the term 'grand strategy' in academic discourse. Liddell Hart described the role of grand strategy as to "coordinate and direct all the resources of a nation, or a band of nations, towards attainment of the political object of the war- the goal defined by fundamental policy."[3]

Grand strategy renders the use of violence and war redundant. War becomes the necessity of the last resort and undertaken only with the maximum chance of victory. John M. Collins sums up, "Grand Strategy if successful alleviates any need for violence. Equally important, it looks beyond victory towards a lasting peace… Grand Strategy controls military strategy, which is only one of its elements."[4]

The grand strategy is basically implemented to achieve objective in pursuit of national interest with war as the last and an unavoidable option. Kantian 'perpetual peace" can be established through proper practice of grand strategy by major players. A grand strategy is the broadest approach of a state that includes military, political and normative means to achieve national objectives. It is sweeping in expanse and synthesis at the highest order. The grand strategy ought to include assessment of current military hard power, economic strength, geographical advantages and the soft power of the state vis-a vis various other competing players. The assessment ought to anticipate the dynamic behaviors of these other powers in a changing international system. In a way, expression of national interest which may vary from nation to nation depending upon its particular geography, unique history, domestic resource base, domestic polity, interest of other actors and the normative structure. Christopher Layne states that grand strategy "must be grounded in a conception of the national interest". Thinking in terms of national interest improves the quality of statecraft by forcing decision makers to ask the right questions- about the relations of ends to means, about what is desirable- when they formulate grand strategy."[5]

Kautilya in the *Arthashastra* lists threefold duties of a ruler in the internal administration which provides a useful tool to discern the national interest. These are *raksha* (protection from external aggression), *palana*(maintenance of law and order) and *yogakshema*(safeguarding the well being of people). But, nations do not work only for the material prosperity. The rulers as well as people are driven by the desire for 'recognition'. Socrates described this drive of "spiritedness" as *thymos.* It is the willingness to risk one's life for the sake of a "value'. It is the psychological aggregate around one's self, the sense of self-esteem. Francis Fukuyama describes the term as "that part of man which feels the need to place *value* on things-himself in the first instances but as the people, actions, or things around him as well. It is the part of the personality which is the fundamental source of the emotions-pride, anger and shame, and is not reducible to desire, on the one hand, or reason on the other."[6] History has been propelled by not mere material needs but by the forceful actors who longed to recover self and the group's self-esteem either by challenging the hegemony or by undertaking expedition for establishing control over other states.

In Indian tradition, the idea of self-recognition is enshrined under the term '*Gaurav', 'samman'*. Therefore, I will add 'dignity' to the list delineated by Kautilya in his prescient examination of the national interest in the *Arthashastra.* This *"four-fold X...ity"*- Security, Prosperity, Stability, Dignity- is the minimal national interest for any political entity.[7] Acronym SSPD can be stated to be a universal presence among the policy makers as the grand strategic ends. Each end is achieved by pursuing different means.

Alastair Iain Johnston argues that the states pursue three ideal grand strategic means of security-- accomodationist, defensive and offensive expansionist.[8] In actual practice, the grand strategy is a proper combinatorics of all the three means to achieve security at minimal cost. This is the Fermat principle for national security. Grand strategy can be viewed as the highest level of synthesis to achieve objectives effectively in accordance with the national interest at minimal cost. It ought to synthesize internal and external dimensions and all other factors in making an intellectual assessment of multi-vector dynamics of a state ; identifying the ends, means and the institutional responsibilities to achieve the ends and later on to perpetuate the attainment .

Achieving security in an anarchic world is the foremost concern for Realists. The classical realists posit for competitive and unilateral strategies for nations after considering the fact that pursuit of maximization of power is rooted in the human

nature of greed itself. Neo-realists substitute human nature with the uncertainty in international system and uneven distribution of material capabilities and argue for realpolitik behavior of these states. The State prefers any of the three strategic means to make itself secure. Johnston has elaborated how a consistent hard realpolitik behavior (*parabellum*) can be ideationally rooted. Johnston termed such behavior as 'cultural realism" as a third explanation for realpolitik behavior. Johnston puts strategic culture as the determinant of the realist behavior at a higher pedestal than either the anarchical structure of international system or the human nature in the classical realist's position. The propensity of a state to pursue either of the accomodationist, defensive and offensive/expansionist policy is rooted in the strategic culture, Johnston argues. Johnston's examination of ideational sources of strategic choices has a huge fan following among Indian strategic community.

This has brought the theme of strategic culture in the discourse over strategic choices. In the early 1980s, the Soviet and the U.S. behaviour were generalized through strategic culture concept. Colin Gray described how the Soviet military was said to exhibit a preference for preemptive, offensive use of force that was deeply rooted in Russia's military history of external expansionism, and internal autocracy, while the U.S. tended to exhibit tendency towards a sporadic, messianic and crusading use of force that was deeply rooted in the moralism of the early Republic and in a fundamental belief that warfare was an aberration in human relations. [9] Johnston summed up such ideationally-rooted strategic disposition under the analytic category of 'strategic culture'. Johnston further borrowed the idea of the famous cultural anthropologist, Clifford Geertz. Geertz viewed culture as a "system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate and develop their knowledge about and attitude towards life."[10] Based upon Geertz's ideational interpretation of culture, Johnston paraphrased Geertz's definition of religion as cultural system, to define strategic culture as "*an integrated system of symbols (e.g. argumentation structures, languages, analogies, metaphors) which act to establish pervasive and long-lasting strategic preferences by formulating concepts of the role and efficacy of military force in interstate political affairs, and by clothing these conceptions with such an aura of factuality that the strategic preferences seem uniquely realistic and efficacious."* [11]

Johsnton argues that structural conditions play at best a secondary role in determining the strategic preferences of states. He compares strategic behaviour of democratic and non-democratic states placed in a similar anarchic international environment. The democratic states behave differently for the democratic and non-democratic opponents. The maxim that 'liberal democracies' do not go to war with each other has also been elucidated by Fukuyama in his path-breaking work, *The End of History* (1992).

Johnston developed a central paradigm of strategic culture to explain varying strategic preferences of accommodation, defense or offense. Johnston seeks out the empirical referent of a strategic culture to a "limited, ranked set of grand-strategic preferences that is consistent across the object of analysis (e.g. textual sources for potential answer to the central paradigm) and persistent across time.[12] Without a preference ranking, there will be wide spectrum of strategies in a nation's history and that would cause policy conundrum. A strategic culture can be said to exist and persist if one finds consistency in preference rankings across objects of analysis from formative historical periods upto the period under examination. [13]

Another political scientist argues that a state's range of strategic choices (and its preferred choice from this range) is set by specific images and metaphors about the strategic environment at time. [14]

Strategic culture refers to such collectively held preferences and shared cultural artifacts like specific image and metaphor. Strategic culture is also reflected in symbols which act as 'mental aids" to make complex environment more manageable. Johnston suggests that "analysis of symbols in strategic texts may reveal a great deal about how strategic axioms in a text might be interpreted behaviourally that is, what sorts of strategic preference rankings are constituted by these axioms. [15]

Can we discern the Great Seals (*mahamudra*) that signify the ideational root of strategic behaviour of major powers?

EAGLE AND THE AMERICAN GRAND STRATEGY

Geography shapes to a large extant, the strategic behaviour of a country. The US is secure with oceanic moats on both flanks. The Pacific and the Atlantic oceans are the natural guards for the U.S. This removes the security anxiety that other major powers have to face from threatening neighbours. The doctrine of Manifest Destiny led the U.S. to expand from a union of 13 states on the Atlantic coast to stretch to the Pacific coast. In 1823, Monroe doctrine was promulgated thereby limiting the European intervention in the western hemisphere. Once secure in the homeland and with entrenched regional hegemony in a power-vacuum western hemisphere, the U.S. could afford to launch itself for extra-regional hegemony.

American grand strategy over last two centuries has been one of expansionism and multiplying the hegemony over as many extra-regions as necessary. In the name of containment strategy, the U.S. in fact further established extra-regional hegemony over the Persian Gulf and East Asia.

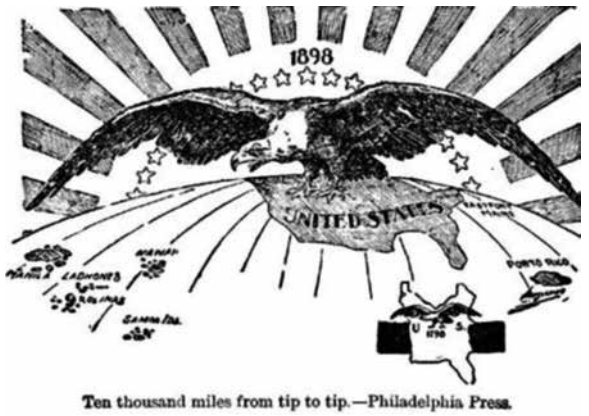
In the decade following the end of the Cold war, the debate in the U.S. turned shriller while seeking a grand strategy to replace containment strategy pursued against the Communist bloc during the Cold War. Posen and Ross examined four competing grand strategies in the essay, '*Competing Visions for U.S. Grand Strategy'*.[16] These are: neo-isolationism, selective engagement, cooperative security and primacy. But, in an inter-dependent world of global economy and limited availability of critical resources, neo-isolationism and selective engagement is virtually ruled out. The primacy as a grand strategy has led the U.S. to current state of imperial overstretches. In an interdependent world, cooperative security does appear a viable option, but a hegemon merely cloaks its hegemonic ambition under the cloak of 'cooperative security.' The proponent of cooperative security like G. John Ikenberry has gained some leverage with the administration by pinpointing the process of 'liberal order building' as the framework for the cooperative security.[17] Subsequently, the U.S. navy issued the strategy paper, "*A Cooperative Strategy for 21st Century Seapower"* in October, 2007.

Christopher Layne provides a critique of primacy as grand strategic choice and advocated the grand strategy of off-shore balancing. He argues that the 'historical record shows that hegemonic grand strategies invariably have proved self-defeating. Because they result in counter-hegemonic balancing and /or imperial overstretch….. instead of pursuing extra-regional hegemony, the United States should have followed an offshore grand strategy." [18] In fact, offshore balancing strategy is another name for the balance of power system. The U.S. creates an extra-regional balance of power system among major powers of Eurasia without fitting itself in the strategic calculus. This gives the US choice to preserve the decisive power and indulge in perpetual edge for the U.S. power. Through such a macro-system, the US influences the outcome of any state or combination of state by aligning or opposing any nation or group of nations. The U.S. continues to prevent the rise of a hegemonic regional power in Eurasia and maintains its grip freely over the global commons particularly the oceanic trade routes.

The hegemonic grand strategy of the U.S. can be symbolized majestically by the image of spread-wing eagle. This image is ubiquitous in American institutions and the political discourse. The cover of the U.S. constitution itself contains this imagery. The coins in the U.S. bear this image. American passports have this image as the seal. The insignia wore by U.S. navy and military have eagle images. The National security Agency and the CIA's logo contain this image. In fact, the spread-wing eagle signifies the American strategic culture. Two wings are the two oceans of the Atlantic and the Pacific. The eagle seeks dominance with bare claws. Thus, the pervasive influence of this imagery influences the policy makers in the U.S. to naturalize tendency for seeking extra-regional hegemony and pursue expansionism as a natural right.

Figure 1: Great Seal of the US

Figure 2: American Eagle Spreads Wing (1898)



Ten thousand miles from tip to tip.—Philadelphia Press.

In the evolving dynamics in Asia, China is viewed as a serious threat to the U.S. hegemony. The U.S. is trying to materialize a balance of power system in East Asia by building a community of democracies involving India, Japan, South Korea, Singapore and Vietnam. An Asian IPTO (Indo-Pacific Treaty Organization) is on anvil. This will complement with the expanding NATO in Western Europe and the South Atlantic. Simultaneously, the U.S. has launched creation of two meso- architectures for trans-regional economic blocs- Trans-Atlantic Partnership (TAP) scheme and Trans-Pacific Partnership (TPP). The US has put Atlanticists like Charles Timothy "Chuck" Hagel and John Kerry on forefront to reinvigorate the Atlantic alliance and referring to Obama's Pacific origin to stitch a strong military alliance in the Pacific. In a way, it is the recursion of the two-ocean strategy that the US is pursuing since Manifest Destiny days. This is the grand strategy of *geopolitical double-facing* for deepening global hegemony.

Thus, the US grand strategy can be visualized as the image of a spread-wing eagle preparing to prey upon new territories as well as the best resources with bare claws.

YIN YANG SYMBOL AS THE EPITOME OF CHINESE GRAND STRATEGY

As China climbs up the Comprehensive National Power(CNP) ladder to emerge as a significant player in international affairs, there is clamor to portray China as an offensive power that aims to usurp the current international system. While many Chinese scholars deliberate upon the ethical and normative strand in the Chinese Strategic culture, cultural realist like Alastair Iain Johnston describes how among two dominant strategic cultures in China- one derived from Confucian-Mencian paradigm that places non-violent, accomodationist grand strategies before violent defensive or offensive ones- and a *parabellum* or hard realpolitik , paradigm which generally places offensive strategies before static defense and accomodationist strategies; there has been a consistence preference for the latter. Johnston explains that the *parebellum* strategic culture persists across China's multiple transitions.[19] Andrew Scobell argues that contemporary Chinese policy is heavily influenced by China's ancient and enduring civilization and the interaction between a Confucian strand and a realpolitik tradition has produced a paradoxical '*Chinese Cult of Defence*' -in which even offensive force is resorted to by providing a 'defensive" moral rationale. [20]

Tiejun Zhang characterizes Chinese grand strategy as one of 'cultural moralism'. This entails "prolonged habit or practice of moralizing and a persistent emphasis on morality, exemplified by Confucian belief on virtue (*de*), benevolence (*ren*) and righteousness (*yi*) as basic norms in maintaining domestic order and conducting security strategy." [21]

Wu Chunqiu, a veteran military scholar at the Chinese Academy of Military Science(AMS) mentions in his book, *On the Grand Strategy,* that China's ancient strategists , never advocated relying only on military power to conquer the enemy; but emphasized combining military power with the non-military power related to war in order to get the upper hand. [22]

These two different approaches finds synthesis in the works of Professor Yan Xuetong of Tsinghua University, China. Professor Yan is a hardcore realist but he emphasizes on righteousness, peace and humane authority as the grand strategic ends. He derives the nature of three type of international leadership for states from Xunzi's writings-humane authority (*wang)*, hegemony (*ba*) and tyranny (*qiang*). The threefold typology of political rule leads to different result for the international system. While true kingship or the humane authority leads to a stable international order, hegemony establishes hierarchies and symmetries, and the international order oscillates between stability (relationship between the

hegemon and its allies) and chaos (confrontation between hegemon and its opponents).Tyranny will inevitably lead to disaster and decline. [23]

Yan Xuetong further mentions that a state can achieve humane authority only after developing sufficient material power and behaving in accordance with international norms that are accepted by the majority of countries. Humane authority attracts allies. But, hegemon practices a foreign policy according to international norms only for own allies and power politics as a principle for dealing with its enemies. A tyranny is a state that uses military force to protect their self interest at the expense of other. Humane authority does not indulge in double standards. Yan Xuetong recommends China to give up its non-alliance principle started in 1982 so as to increase the number of allies and evolve as a humane authority by undertaking greater international responsibility and offering moral and strong leadership. In fact, Chinese leadership pursued diligently Deng Xiaoping's 24-characters strategy since early 1990s: 'observe calmly; secure own position; cope with affairs calmly; hide our capacities and bide our time; be good at maintaining a low profile; and never claim leadership (*tao guang yang hui, you suo zuo wei*). Such statecraft on maintaining a low-profile was beneficial for peaceful rise of China to some extent but also puts a question mark over China's hidden intentions. To minimize the growing mistrust between China and the U.S.; Yan Xuetong proposed the idea of 'cooperation without mutual trust". Mutual trust can result from long-term cooperation. He refers to the phrase, 'neither-friend-nor-enemy' (*fei di fei you)* which became widely accepted by experts in the U.S. and China to describe the new kind of unstable relationship between the two countries. Yan Xuetong and Qi Haixia theorize such a highly volatile relationship, apparent in shifts between good and bad periods, as "*Superficial Friendship"*.[24] In such a superficial friendship relationship, strategic competitors learn to develop strategic partnership.

China finds itself growing peacefully in such an atmosphere of unstable relationship. In fact, neither cultural moralism nor cultural realism; neither offensive realism nor defensive realism can properly explain China's strategic thinking. We have seen how Chinese policy has now shifted from Deng's 'low profile' (*tao guang yang hui, you suo zuo wei)* to Xi Jinping's formulation in January, 2014 about "proactive and to excel" (*fen fa you wei)*.

This is the unstable dynamics inherent in Chinese thinking symbolized by the Yin-Yang pair. Just as Yin and Yang are interdependent and mutually interpenetrate, Chinese grand strategy can be seen as harnessing the Yin-Yang philosophy of dynamic instability in the relationship. Yin and Yang are distinctively Chinese in its fundamental principles and cannot be comprehended through Western thinking. Yin-Yang symbols represents perfect balance. The opposites interact and in the process the seed of all things germinate. Evil results from an imbalance in Yin and Yang, and good arise from the harmonic balance of the two. It is impossible to have one without its opposite. For example, night (*Yin)* and day (*Yang*) form a Yin-Yang pair. But, it is impossible to have one without the other. Both co-exist and co-dependent in a totality. This principle is expressed in the Yin-Yang symbol by placing the seed of the opposite within the diagram. The small dots within Yin-Yang pair (represented by black and white) symbolize that there is seed of Yin (black) within Yang (white) and seed of Yang within Yin. Nothing is absolute with Yin and Yang. The designation of something as Yin or Yang is always relative to some other thing. Yin can transform into Yang under certain conditions as there is seed of Yang within Yin-part. This is how night paves way for the day, heat for cold and so on. In such a dynamic balance, the relationship goes beyond balance to one of harmony. This also captures the Buddhist momenatriness of constant cyclical flux.

Figure 3: Yin-Yang symbol

Thus, in Superficial Friendship Theory, friendship carries the seed of discord and the enmity that of friendship. The Chinese theorists focus more on harmony and not on balance of power. There is a vast discourse on Harmonious Neighbourhood (*hexie goujian*), Harmonious Asia (*hexie Yaxiya)* and Harmonious World (*hexie shijie)* since Chinese President Hu Jintao embarked upon the theme of Harmony (*he*) during his U.S. trip in October, 2006. Cooperation (*hezuo*) and harmony (*hexie*) has become dominant theme in the Chinese strategic debates which clearly springs from the Yin-Yang philosophy. The western strategic discourse is focused on "rebalancing", "calibrating the balances", "balance of power" and clearly misses the essence of Chinese strategic culture.

While Cold War was an open strategic competition between the U.S.S.R. and the U.S. and attained degree of stability, the Chinese strategists favour instability in the relationship so that the same does not turn into open competition. They also advocate certain degree of competition realizing that often such healthy competition mediated through norms would pave way for cooperation in accordance with the Yin-Yang principle. Forging relationships even without trust finally creates a hierarchical structure based upon material capability and China can exercise leadership in the name of humane authority with minimal operational cost and loss of precious human lives. Yin-Yang symbolizes China's grandest of the grand strategies. The *parabellum* and Confucian-Mencian paradigm are fused unto a fluctuating relationship. While opening up, China is building a "Great Wall of Alliances" with Shanghai Cooperation Organization (SCO) on west flank, Russia-China-Mongolia (RCM) Cooperation in the north, ASEAN +3 on the eastern flank and is trying to get entry in the SAARC on its southern tier. China's objective has been not to stabilize relationships even across this emerging Great Wall of Alliances. In stability is China's defeat. The Yin-Yang dynamism alone can bring rejuvenation to the Chinese state and society, as per the debates raging among the Chinese strategists.

DOES INDIA HAVE A GRAND STRATEGY?

Does India have a grand strategy? Indian government doesn't articulate a 'grand strategy' like the U.S. which bring out its National security Strategy at regular interval. But, absence of an articulated grand strategy doesn't mean that India does not have a grand strategy. Though, George K. Tanham wrote in his essay, *Indian Strategic Thought* [25] that India has produced little formal strategic thinking and planning. He provides three reasons for the same:

1. India lacked political unity throughout most of its history. The few brief periods of imperial unity depended on the will and power of a great leader.
2. Hindu concept of time in which there is little sense of history and future. This discourages planning.
3. Hindu view of life as unknowable and not entirely under man' control. This discourages strategy and planning. [26]

Tanham's essay led to Indian response. But, even after two decades, there is no clear cut articulation about an Indian grand strategy. There are competing visions but those are couched in the metaphors and rhetoric and completely lack any empirical data, typologies and modeling. India' leading government think tank, Institute for Defence Studies and Analyses (IDSA) in New Delhi organized two day conference on "*India's Grand Strategic Thought"* from 8-10 September, 2010. The papers presented have been just released in a book form under the title, "*India's Grand Strategy: History, Theory, Cases"*[27]. One of the editors, Professor Kanti Bajpai argues about three major schools of thought in Indian strategic thinking- Nehruvians, Neoliberals and Hyper-realists. Bajpai argues that the core values remain common to all, but strategies differ. Hyper-realists emphasize upon military strength for the state to look after its interest in a dangerous, anarchic world and draw inspiration from western thinkers on war and strategy like Thucydides, Machiavelli, Hobbes, Morgenthau as well as Kautilya's Arthashastra. Neoliberals posit for the primacy of economics in international relation. Nehruvians believed in security in peace and war by means of regional co-operation and non-alignment. In fact, Bajpai is transposing western arguments in Indian context without delving into the issue of Indian strategic culture rooted in its history and culture or building IR theory with Indian characteristics. He doesn't go for any empirical analysis and it becomes difficult to gain any useful insight from the arguments of political philosophy dating back to a period before the post-modernist and post-post-modernist turn. The arguments and the terminologies put forward by him are not entirely new. He presented the same theme before an august audience in the year 2000, while delivering 17th P.C. Lal Memorial lecture upon the subject, "*Nuclear policy: Grand Strategy and Political Values in India*". Unlike Professor Yan Xuetong, Wu Chunqiu and their contemporaries in China, no strategic calculus for India derived from Indian thinking has been attempted. Though, India's National Security Adviser, Shiv Shankar Menon coined a moniker, "*strategic autonomy"* and *"non-alignment as flexible realism"* to reason about India's grand strategy, while paying tribute to the doyen of Indian strategic community, K. Subramanian, the generalized undefined concept doesn't hold much water.

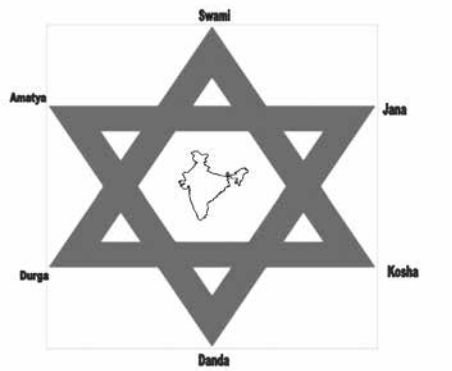
Rhetoric cannot be the substitute for hardcore ideas. What is required is to delve deep into India's history and study the classical texts, decipher the dominant cultural symbols that influenced strategic behaviour of the Kings and their ministers. One needs to dig for specific symbols and metaphors shared simultaneously during the period of external aggression against a territory. India has been a hunting ground for the invaders from the land and the sea for thousands of years and it still retains political unity to a large extent. What is that which keeps India secure, stable and persistent in renewal?

Geographer Schwartzberg concludes that only 9 out of 63 major powers of Indian subcontinent in the period between 60 B.C. and 1976 A.D. can be characterized as pan-Indian.[28] These nine pan-Indian powers were as follow: Mauryas, Guptas, Rashtrakutas, Khiljis, Tughlaqs, Mughals, Marathas, British India and the present Republic of India. All these pan-Indian powers were centered in areas that are today a part of the Indian republic. This clearly indicates that inspite of partition, the core of Indian subcontinent is intact and the severing of peripheries on two flanks (Pakistan and Bangladesh) might prove to be a transient event. This "something" that binds India and let it rebound time and again inspite of periodic invasions must be ideational since the external environment has changed many a times. Can we discern this "*ideational something"* by rereading Kautilya's *Arthashastra*, the grandest of classical text on science of State?

SECRET OF KAUTILYA'S *ARTHSHASTRA*: TRIADIC THINKING

Critics accuse Indian realists of pursuing a hyperrealist policy based upon Kautilya's *Arthashastra*. Kautilya predate Machiavelli by more than a millennium. The *Arthashatra* is a magnum opus on statecraft. It elaborates the *Saptanga* theory of the State and the *Shadgunya* policy for conducting diplomacy. The *Saptanga* theory describes the 'constituting principles of organizing the state." [29] The state has seven elements (*prakrittiya*)- *Swamin*(king), *Amatya*(minister), *janapada* (people and territory), *durga*(fort), *kosha*(treasure) , *danda*(armed force) and *mitra*(alliance). Since alliance is merely external relationship, the basic internal constituents of a State are only six according to the *Arthashatra*. *Amatya* in the contemporary context will refer to institutions. The six-fold internal constituents of the State can be represented through a hexagram.

Figure 4: Hexagram of *Six Prakrittiya*



The King's duties in the internal administration is three-fold: *raksha*(protection from external attack), *palana*(maintenance of law and order), and *yogakshema*(welfare of people). [30] Applying the principles of *Arthashastra,* the Mauryan Empire sought a balance of the triad of *artha-dharma-kama.* [31] This has been termed as the *trivarga* of *purushartha by* Kautilya himself.

In fact, the whole *Arthashatra* is an elaboration of three-folded truth:

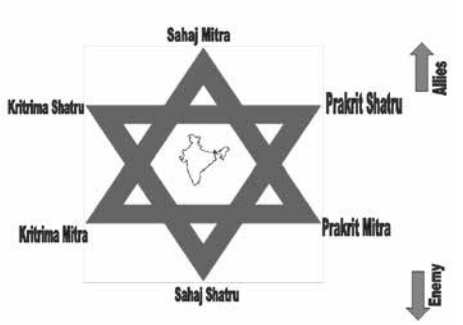
- *Sukhasya Mulah Dharmah*: The root cause of happiness is the righteous duties(*Arthashatra,* Chapter I.1)
- *Dharmasya mulamartha*: The root of dharma lies in prosperity and wealth. (*Arthashatra,* Chapter I.2)
- *Arthasya mulam rajyam*: The root of prosperity lies in the stability of State. (*Arthashatra,* Chapter I.3)

Thus, without peace and political stability, there cannot be prosperity and *aishwarya.* Only a wealthy and prosperous society can devote energy in the pursuit of righteous living. Without righteous life, one cannot attain happiness. Thus, most of the commentators miss the essence in Kautilya's *Arthashastra* when they claim Kautilya to be a hyperrealist who advocates all form of duplicity and stratagem in pursuit of power and domination.

It is a selective reading of *Arthashatra* when foreign scholars criticize the Indian thinking as that of treating neighbors as enemy by focusing on *mandala* theory. But, the *mandalas* are not geographical, rather conceptual. There is no white and black theory of treating all neighbours as enemies in the *Arthashatra.* The peaceful and prosperous neighbourhood for stability of the state is a major theme in the work. Like Xunzi, Kautilya emphasizes that alliances strengthen a state.[32] Kautilya want the king to develop good relationship with neighbouring king so that an enemy does not get foothold in the neighbourhood.

Kautilya divides states into a complex triad system-normal states, middle (*madhyama*) state and neutral (*udasina*) state. Normal states can either be a friend (*mitra)* or enemy *(shatru)*. *Mitra* is of three kind: *sahaj mitra*(Natural friendship established through blood relationship or matrimonial alliances), *kritrima mitra*(acquired through obligations and favours done) and *prakrita mitra*(neighbouring kingdoms which are having common interest with the particular kingdom). Similarly, there is a triad typology for the category of enemy (*shatru*) - *sahaj shatru*(natural enemies among relatives), *kritrima shatru*(created due to breach of obligations) and *prakrita shatru*(neighbouring states with competing interest). If one represents *mitra*- triad as an up triangle and *shatru*- triad as a down triangle, and interlocks them around the individual king, a hexagonal *mandala* is generated. This is the Star of David held so sacred by the Jews and a symbol of spiritual significance in India. This is the backbone of the Sriyantra, the king of all geometrical designs used in religious ritual and spiritual practices in India from time immemorial.

Figure 5: Typology of Friend/ Enemy triads



We find various triads all through the book. The war itself is to be launched in three ways: open war (*prakashayuddha*), secret war (*kutayuddha*) and silent war *(gudayuddha*). There are three kinds of neighbours – hostile (*aribhavi*), friendly (*mitrabhavi*) and vassal (*bhritbhavi*). The aggressor is one of the three kind- righteous (*dharmik*), greedy (*lobhi)* and tyrannical (*atyachari*) and appear to be resonating Xunzi's thought during the same period.

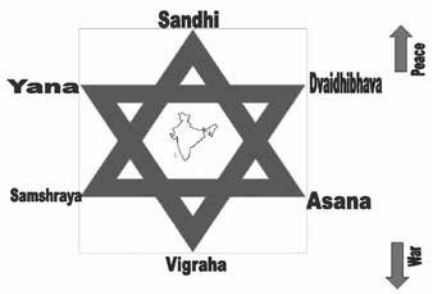
I have discussed in my book, *Sriyantra and the Geophiloophy of India*[33] that triadic thinking is rooted in Indian geography itself. This is the geophiloophical realism. Since India has a perfect triangular peninsula, this landscape had profound influence over Indian thought-structure. Indian mind is encapsulated in triadic thinking that possibly stems from the geophilosophical domain. The Vedas are three; also termed TriVedas-Rik, Sam, Yajur. Atharveda was a later development and still not debated along with the early tri-Vedas. The Reality is believed to be tri-*gunatamak*-composed of three gunas-*sattva, rajas* and *tamas*. The fires are three- *surya*(sun), *soma*(moon) and the *agni/vahni*(fire). The fire in social world are three- *ahvaniyagni*(sacrificial),*Garhapatyagni*(household) and *dakshinagni* (creamatory). There are three powers of Shakti- *Iccha*(will), *jnana*(knowledge) and *kriya*(action). Similarly, there are three lokas-*bhuh*(earth), *bhuvah*(space),*svah*(heaven)three padas of Gayatri(Tripadi); three bodies- *sthula*(gross), *sukshma*(subtle) and *akarana*(causal); three state of speech-*Pasyanti, Madhyama, Vaikhari*; three state of consciousness- sleeping, dreaming and waking; three kinds of breath-*prana-apana,samana*; three nadis of the highest path-*sunshumna, Pingala, Ida*; three-fold classification of kala- *bhuta*(past), *vartman*(present), *bhavishya*(future).

Another Indian concept has been the analogy of reflection. It is how sacred- complexes duplicate. There are innumerable Gangas and the Govardhanas. When an entity and its mirror-image (opposite) interlock, there is fullness of existence. This lies at the root of tantras where male and female energies as the opposites enter into conjunction. When a triangle interlocks with its mirror-image, this creates the *shatcakra*(Star of David). In the *shatcakra*, the conjunction also creates six secondary triangles i.e. three times more triangles than the original number. Thus, the structure duplicates and multiplies and signifies the growth. It is why the *shatcakra* is employed to propitiate the divinity or prosperity. The *shatcakra* also emerged as a significant ideogram for subsequent Indian thinking and spread across various realm.

The sacred geography of India contains references to the six mountain range – Himavat, Hemakuta, Nishadha, Nila, Sweta and Sringavat stretching over the *Jambudvipa.* The division between mountain ranges is called Varshas. Present day India is known as Bharat *Varsha.* Hindu system of philosophy has six principal system- samkhya, yoga, Nyaya, Vaisesika, Mimamsa and Vedanta. The triVedas have six Vedangas. But, the six-foldedness appear to govern the psychological realm more than the material relm. There are six cakras (mystical subtle circles) inside the body which a Yogi intends to pierce to realize the divinity. The seasons are cyclic but also a psychological experience. Therefore, there are six seasons (*shadritu*) - *Basant, Grishma, Varsha, Sharad, hemant* and *Shishir*. There are six passions collectively- *kama, mala, mana, lobha, harsha* and *rusha.*

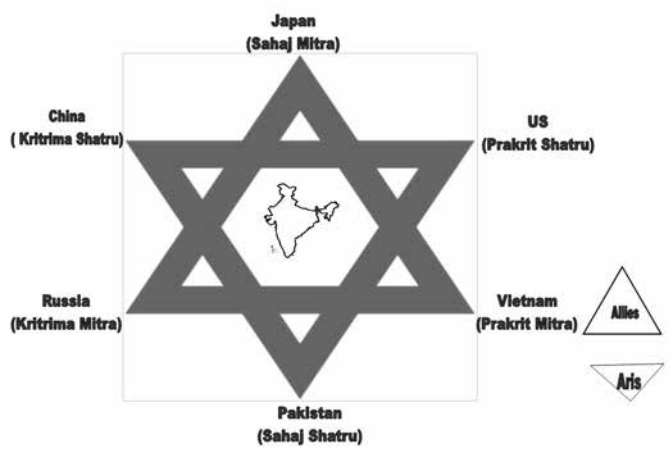
Since foreign policy depends upon psychological perception of the intentions of friends and enemies as well as the psychological make up of the actor himself, Kautilya propounded the theory of *shadgunya*(six-fold policy) for the king to apply to the elements of his circle of states. The *shadgunya* policy comprises *sandhi*(peace/alliance), *vigraha*(enmity/ war), *asana* (inaction so that things fizzle out), *yana*(preparation for war), *samshrayi*(seeking protection of a powerful state when threatened by a powerful enemy) and *dvaidhibhava*(dual policy). The *shadgunya* policy can be represented through a *shatcakra*.

Figure 6: Typology of *Shadgunya* foreign policy



A *shatcakra* can also be built for two triads of different friends and enemies by interlocking an up and down triangle. We can design a shatcakra for India in current strategic environment. Three kind of friends for India can be as follow: Japan (*sahaja mitra*), Russia (*kritrima mitra*), Vietnam (*prakrit mitra*). Similarly, three kinds of enemies can be identified as Pakistan (*sahaj shatru*), China (*kritrima shatru*) and the U.S. (*prakrita shatru*). The U.S. has been kept in the typology of enmity due to the very nature of *matasya-nyaya* in international relations. The US is hegemonic and bound to have inimical relationship with a rising major power like India. Since the U.S. is rebalancing focus towards Indian Ocean, the U.S. ought to be counted as a power in the geographical proximity like a *prakrita* enemy.

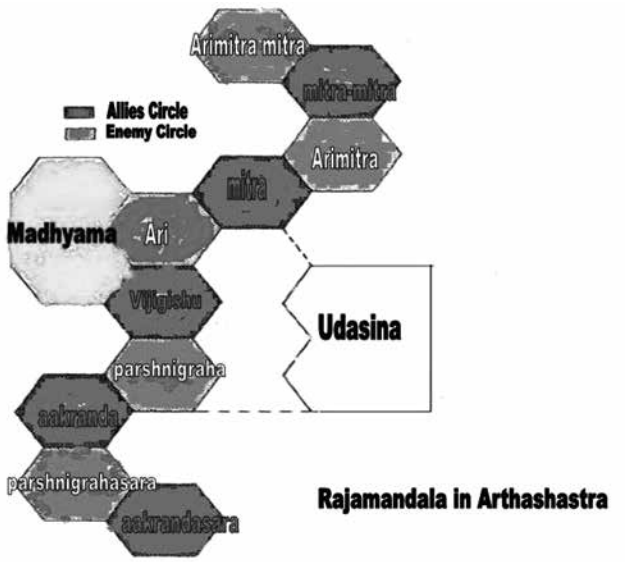
Figure7: *Shatcakra* of India's Primary Friends and Enemies



RAJAMANDALA AND SRIYANTRA

Kautilya developed a complex theory of foreign policy, *Rajamandala*- the circle of kings. It is to emphasize again that by visualizing concentric mandala, most of the commentators wrongly interpret that in the *Rajamandala*, all neighboring states are to be treated as enemies or potential enemy. The neighboring states can be friends, enemies as well as the Middle states(*madhyama*). There are 12 States constituting a *Rajamandala* each with six elements (*swami, amatya, janapada, durg, kosha and danda*). Thus, there are 72 elements that are to be factored in while formulating a grand strategy for a conqueror state (*vijigishu*). Twelve states are named as follow: *Vijigishu(* conqueror state/ self), *ari*(enemy), *mitra*(friend), *arimitra*(enemy's friend), *mitra-mitra*(friend's friend), *arimitra-mitra* (enemy's friend's friend), *parshnigraha*(enemy in the rear), *aakranda*(friend in the rear), *parshnigraha-sara*(friend of rear enemy), *aakranda-sara*(friend of rear friend), *madhyama*(middle king) and *Udasina*(neutral state). *Madhyama* is the state sharing border with both the *Vijigishu* state and the prime enemy and also more powerful than either of them. *Udasina* is more powerful than the *madhyama* but geographically distant from the *Vijigihu*. Their relationship is represented through the Figure 8 below:

Figure 8 : *Rajamandala* in *Arthashastra*



We can take up the case of India. Pakistan can be put in the category of *sahaj shatru*(fraternal enmity). China is the madhyama since it share the border with both India and Pakistan and also more powerful than each of them. The U.S. is distant from India and in Indo-Pak relationship, pursues a policy of neutrality. The U.S. is also more powerful than the madhyama, China. Thus, the U.S. fits the definition of *udasina* state for India.

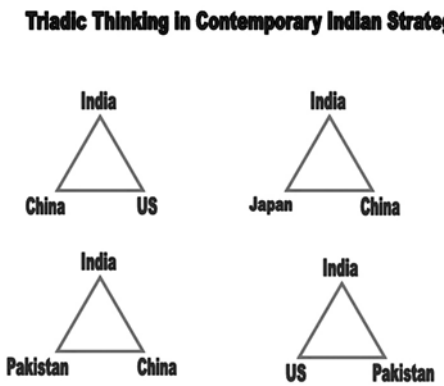
In this *rajamandala*, one can notice that there are five enemy state and four friendly states, one middle state and one, the most powerful and yet the neutral state. If we follow the triadic representation for friends and enemies, we can decode the *rajamandala* with fresh insight. Five enemy triangles and four friendly triangles if interlock, the process will generate the Sriyantra, the King of the mandalas. In a Sriyantra, these nine primary triangles produce 43 secondary triangles and the gain is almost 4 times in the number of triangles. This is much more productive as self-replicating design than even a *shatcakra.* In a Sriyantra, four circles of secondary triangles are enclosed by an eight-petaled and sixteen petaled enclosure. If we synthesize Kautilya's *rajamadala* idea with the Sriyantra geometry, the grand strategy of India might emerge as an ideogram.

In fact, the *Arthashatra* itself is a salutation to the Goddess *Sri.* The very first verse of *Arthashatsra* refers to the Sri as the Goddess of prosperity.[34] Throughout the book, the reference has been made to the Goddess Sri and Sri as a sign of prosperity. The book exhorts vigorous and courageous act as the way to obtain the blessings of goddess *Sri*. *Artha* is used as a double entendre – wealth and territory. Sri is the Goddess of the *artha* in both meanings. Thus, fusion of Sriyantra model and the *Arthashastra* concepts are very natural.

Influence of triadic thinking is evident on Indian strategic thinking. India always plans by taking into account

triad of relationship-India-China-Pakistan, India-U.S.-China, India, U.S.-Pakistan, India-China-Japan, India-Pakistan-Afghanistan, India-SriLanka-China, India-Russia- U.S.

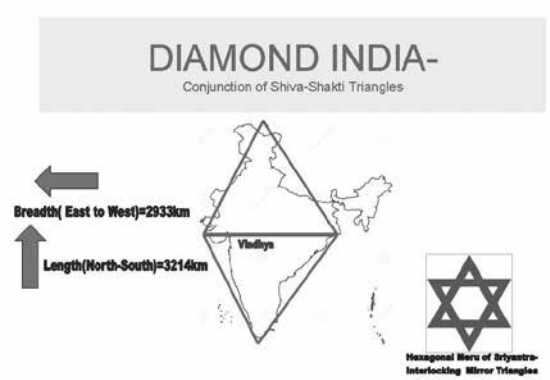
Figure 9 : Triads in Indian Strategic planning



This stems from Indian Geography.Indian geography as pointed out earlier in the paper is not only triangular but an un-interlocked superimposition of two opposit triangles. Two geographical triangles touch at around the Vindhyas and give Indian geography the look of a 'diamond". George K. Tanham rightly observed this appearance in his study of Indian strategic thought:

"The Himalayas and the Hindukush mountains in the north, the Bay of Bengal in the east, and the Arabian Sea in the west have created a giant natural entity often referred to as the Indian sub-continent. This ***diamond–shaped landmass*** *stretches over 300 kilometers from the southern most tip of India's north to the Himalayas and roughly the same distance from east to west."* [35]

Figure 10: India that Mirrors Like a Diamond



India can be viewed as two opposite triangles of similar size (east to west length is 2933 km and north to south is 3214 km.) joining around the Vindhyas. If both halves get interlocked, a *shatcakra* will be formed with J&K, Gujarat, North-east India and Tamil Nadu-Kerala occupying secondary triangles. But, can Sriyantra being the ultimate encapsulation of Indian triadic thinking with its geophilosophical roots, provide the Diamond path of foreign policy to Indian strategy planners? Can Sriyantra be the ideogram of Indian grand strategy complementing spread-wing eagle image for the U.S. and the Yin-Yang symbol for China? Is it likely that exactly the ninth pan-Indian power viz. Republic of India would immensely prosper and rebound with the Sriyantra model of the Grand Strategy?

SELECTING THE RIGHT ELEMENTS FOR THE SRIYANTRA MODEL

Grand strategy ought to incorporate history, present relationship and future needs. Those requirements vary from nation to nation and arise from a neatly defined national interest. What is India's paramount national interest? It has been beautifully summarized in the very first three verse of the *Arthashatra* as righteous living, prosperity and peaceful

stability. The righteous living is in accordance with a normative structure, *dharma* that promotes compassion, peace and cooperation. *Dharma* is the miniaturized concept that has manifold applications and is also synonymous with the concept of fairness, justice, and virtuous. According to the *Arthashatra,* the root of the triad of objective lies in the hard work, courage, enthusiasm, risk-taking ability, organization and proper policy. Kautilya deliberates upon a leader with such virtue as the true hero. A great leader is also a great organizer who can impose an order that limits the unpredictable contingencies. Men can do things that earlier could be accomplished only by the Gods. [36] Thus, the proper organization, right policy and dynamism can help achieve the goal. But, are these enough in an anarchic international system? It is a competitive world out there where resources are limited and distributed unevenly. Other states vie for achieving "*security, stability, prosperity and dignity"* at the cost of others and thwarting one's chance to have unlimited access to the resources. One is required to identify those very states and formulate strategic choices, accordingly. Selecting the states which are to be given preference for orienting policy is a serious business, since preferences are to be hierarchically arranged in a world where interacting units have highly uneven material capabilities.

Naturally, the six *prakrittiya* of Kautilya's *Saptanga* theory comes to our mind. These can be the criteria for identifying the players in the Grand Strategy Mandala-*swamin, amatya, janapada, durga, kosha* and *danda. Swamin* and *amatya* are important factors and has to be taken into consideration for formulating policies like cooperative security through institutional dialogues or if the leader of a state is belligerent, thence forming alliance and partnerships with other players to thwart evil designs. But, these two factors are short-term for a longer durée calculus. Out of the rest four, *janapada* connotes both, population and territory and this ought to be given preference as the determining criteria. In current context, *durga*(fortification) will refer to the ease of access or command over the global commons. *Kosha* will refer to the fiscal health, availability of finance capital and the forex reserve. *Danda* will include nuclear capability too.

Eighteen out of top 20 most populous countries in the world have been selected for this Model. Ethiopia (Rank: 13) and Congo-Kinshahsha (Rank: 19) has not been included. The dynamics of population has to be closely watched out. According to the US Census Bureau projections, while there are 4 countries in top 20 most populous countries from Africa at present, the number is likely to shoot to 6 by 2050 A.D. Massive expansion of population in Africa is underway. Africa's population surpassed that of Europe in 1997, but it has added one-third of Europe's population (nearly 226 million) in next 13 years alone.

Table 1: Top 20 Most Populous Countries

2014		2025		2050	
Rank	**Country**	**Rank**	**Country**	**Rank**	**Country**
1	China	1	India	1	India
2	India	2	China	2	China
3	U.S.	3	U.S.	3	U.S.
4	Indonesia	4	Indonesia	4	Nigeria
5	Brazil	5	Nigeria	5	Indonesia
6	Pakistan	6	Pakistan	6	Pakistan
7	Nigeria	7	Brazil	7	Bangladesh
8	Bangladesh	8	Bangladesh	8	Brazil
9	Russia	9	Russia	9	Ethiopia
10	Japan	10	Mexico	10	Philippines
11	Mexico	11	Ethiopia	11	Mexico
12	Philippines	12	Philippines	12	Congo-Kinshasa
13	Ethiopia	13	Japan	13	Egypt
14	Vietnam	14	Egypt	14	Russia
15	Egypt	15	Vietnam	15	Tanzania
16	Turkey	16	Congo-Kinshasa	16	Vietnam
17	Germany	17	Turkey	17	Japan
18	Iran	18	Iran	18	Turkey
19	Congo-Kinshasa	19	Germany	19	Iran
20	Thailand	20	Thailand	20	Uganda

Source: Compiled from *U.S. Census Bureau.*

But, more population does not necessarily add to a country's strength. Therefore, only two African nations, Nigeria (Rank: 7) and Egypt (Rank: 15) out of top 20 most populous countries have been identified for the Model. Ethiopia with a net population of 9.6 crores has been excluded due to various reasons. The share of trade between India and Ethiopia is mere 0.10% of India's total trade in 2012-13. There is no resource base of any strategic or critical mineral or even fossil fuel. Its urbanization is very low and stands at 17 % (2011). After independence of Eritrea on 24th May, 1993, the Red sea coast has been lost and as a landlocked state, it has low strategic value in the Horn of Africa. With a low GDP (US $47 billion in 2013), Ethiopia is marred by ethnic clashes in Gambela and insurgency in Somali. Only high population doesn't merit preferential attention of Indian policy makers towards Ethiopia at this stage.

Take the case of Congo-Kinshasa. With a current population of 7.74 crore, it occupies the 19th spot in the chart of world's most populous nations. According to the projection of the U.S. Census Bureau, it might climb to 12th position by 2050 A.D. Unlike Ethiopia, it has a huge resource base. There are huge mines of copper, zinc, tin, diamond and tungsten. But, for this country, resources are a curse. It is mired in a prolonged resource war played by different countries and their backers. In fact, many view Congo at the centre of Africa's world war. Neighbouring countries like Angola, Namibia, Zimbabwe, Uganda, and Rwanda are involved in the ethnic conflicts within Congo and many of these countries themselves act as tactical props of the major extra-regional powers like China, Russia, France or the U.S. More than three million people have been killed in civil war raging soon after its independence in 1960 when the popular President Patrice Lumumba was murdered by troops loyal to Army Chief Joseph Mobutu in 1961.

The economic condition of Congo is dismal with mere US $18.56 billion GDP at official exchange rate in 2013. It is a minor economy. More than 70% population still survives at below poverty line. India's trade with Congo is meager at only $147 million in 2012-13, that amounts to 0.02% of India's total trade. India's active engagement with Congo might estrange relationship with other viable economic/security partners without much advantage to India's national interest.

All top 10 countries with largest population finds place in the Sriyantra *mandala*. The set of three nations alone constitute 58% of the world population. The innermost core has four of the top 10 most populous countries viz. China, India, Pakistan and Bangladesh. These four countries alone contribute 41.23% of world population as per figure/estimate of government agencies in April, 2014.

Out of 28 countries with population of more than five crores, 26 countries have been included in the model. Out of top 42 countries with population of more than 3 crore, 32 countries have been selected. Following 10 countries have been excluded based upon strategic value and current level of economic engagement with India: Ethiopia, Congo-Kinshasa, Uganda, Sudan, Poland, Algeria, Argentina, Tanzania, Morocco and Peru.

Now, we may have a look at the comparative economic strength of the major countries. The World Bank has recently released data of International Comparison Program(ICP) which shows that in 2011, top 30 biggest economies had produecd 84.1% of world GDP at PPP. All except Poland has been inncluded in the model. Since, India is highly dependent on Russia for defence equipments and Russia has evolved as a permanent friend, preferential policy towards Poland may be detrimental to India's Russia ties. All top 22 biggest economies constituting 78.3% of world GDP in the year 2011 are included in this model. Once the full data is released for all the 1999 countries covered under the ICP, it is estimated that the 67 countries participating in the grand mandala will have more than 92% share of the world GDP.

The next criterion is to rope in military and diplomatic heavyweights. All the five permanent members of the UN Security Council are included. Among countries that possess nuclear-weapons, all but North Korea has been included. Since India intends to deepen ties with both Japan and South Korea, North Korea should not seize preferential attention of policy makers. The trade between India and North Korea is negligible. North Korea is also not a resource-supplier. It is not in the geographical proximity. But, the *mandala* is dynamic and country like North Korea might come inside *mandala* if there is regime change in future or denuclearization of Korean peninsula and strong economic recovery in North Korea.

All the world's top 15 military powers find place in the *mandala.* These are U.S., Russia, China, India, UK, France, Germany, Turkey, South Korea, Japan, Israel, Italy, Egypt, Pakistan and Brazil. This ranking has been compiled by using Pwr index (Power index) based upon 50 different factors by GFP (Global Fire Power). Out of the top 25 most powerful militaries, only Poland has been excluded from the *mandala.* All the 11 countries that possess aircraft carrier have been included. The list includes: U.S., Italy, India, China, Brazil, UK, Thailand, Spain, Russia, Japan, and France. Colombia is a strong regional naval power and possesses 11 submarines. Colombia is the second most populous country in South America after Brazil and expected to be on a growth curve. India's total trade with Colombia was significant with $4 billion total trade in the year 2012-13. These manifold factors are the reason for Colombia's inclusion.

Next factor that has been taken into account is India's commercial relationship with the rest of the world. No country can be secure and stable until and unless it achieves a modicum of growth rate so as to provide job to the growing working population. Only with a higher growth, the state can generate sufficient revenue to support the marginalized populations through targeted intervention and also build up business-friendly infrastructure. The growth can be sustained only in a smooth global trading system. The countries, with which strong commercial ties have been stabilized, should always require preferential attention. Trading statistics of 222 countries available with the Export Import Data Bank of the Ministry of Commerce, Government of India for the year 2012-13 has been analyzed. Among the top 50 trading nations with India which constitute 93.18% of India's total trade, 46 countries have been included in the model. All among top 42 countries have been included. This set alone constitutes 91.22% of India's total trade. Share of trade of 67 countries included in the *mandala* is 92.2% of India's total trade. That leaves mere 7.8% share of rest of the 156 countries/ dependent territories with which India has commercial relationship.

Table 2: Significant Trading Partners of India (2012-13)

(Values in US$ Million)

Rank	Country	Export	Import	Total Trade	Trade Balance	Share (%)
1.	**U Arab Emirates**	36,316.65	39,138.36	75,455.01	-2,821.72	**9.54**
2.	**China(PRC)**	13,534.88	52,248.33	65,783.21	-38,713.45	**8.32**
3.	**U S A**	36,155.22	25,204.73	61,359.95	10,950.49	**7.76**
4.	**Saudi Arab**	9,785.78	33,998.11	43,783.89	-24,212.33	**5.53**
5.	**Switzerland**	1,117.28	32,166.54	33,283.82	-31,049.25	**4.21**
6.	**Germany**	7,246.20	14,325.79	21,571.99	-7,079.58	**2.73**
7.	**Singapore**	13,619.24	7,486.38	21,105.63	6,132.86	**2.67**
8.	**Iraq**	1,278.13	19,247.31	20,525.44	-17,969.18	**2.59**
9.	**Indonesia**	5,331.30	14,879.49	20,210.79	-9,548.19	**2.55**
10.	**Hong Kong**	12,279.20	7,907.17	20,186.37	4,372.04	**2.55**
11.	**Japan**	6,100.06	12,412.29	18,512.35	-6,312.24	**2.34**
12.	**Kuwait**	1,061.08	16,588.13	17,649.21	-15,527.05	**2.23**
13.	**Korea RP**	4,202.25	13,105.12	17,307.37	-8,902.87	**2.19**
14.	**Qatar**	687.18	15,693.08	16,380.26	-15,005.89	**2.07**
15.	**Belgium**	5,507.30	10,046.87	15,554.17	-4,539.57	**1.97**
16.	**Australia**	2,348.65	13,085.70	15,434.34	-10,737.05	**1.95**
17.	**Iran**	3,351.07	11,594.46	14,945.53	-8,243.39	**1.89**
18.	**UK**	8,612.54	6,293.09	14,905.62	2,319.45	**1.88**
19.	**Nigeria**	2,740.04	12,086.11	14,826.15	-9,346.07	**1.87**
20.	**Malaysia**	4,444.07	9,951.06	14,395.13	-5,506.99	**1.82**
21.	**Venezuela**	234.14	14,117.67	14,351.81	-13,883.54	**1.81**
22.	**South Africa**	5,106.93	8,887.89	13,994.82	-3,780.96	**1.77**
23.	**Netherland**	10,565.02	2,379.09	12,944.11	8,185.93	**1.64**
24.	**Brazil**	6,048.53	4,825.76	10,874.29	1,222.77	**1.37**
25.	**France**	4,986.03	4,652.36	9,638.39	333.66	**1.22**
26.	**Thailand**	3,733.17	5,352.61	9,085.78	-1,619.44	**1.15**
27.	**Italy**	4,372.61	4,711.27	9,083.87	-338.66	**1.15**
28.	**Angola**	488.79	7,157.54	7,646.33	-6,668.75	**0.97**

29.	**Taiwan**	3,043.97	3,963.35	7,007.32	-919.38	**0.89**
30.	**Russia**	2,295.68	4,231.56	6,527.25	-1,935.88	**0.83**
31.	**Vietnam Soc Rep**	3,967.37	2,314.78	6,282.15	1,652.60	**0.79**
32.	**Israel**	3,739.71	2,356.66	6,096.36	1,383.05	**0.77**
33.	**Turkey**	3,963.66	2,034.18	5,997.84	1,929.48	**0.76**
34.	**Bangladesh**	5,144.99	639.33	5,784.31	4,505.66	**0.73**
35.	**Mexico**	1,628.24	4,037.62	5,665.86	-2,409.37	**0.72**
36.	**Egypt**	2,897.33	2,553.47	5,450.80	343.86	**0.69**
37.	**Canada**	2,036.58	2,800.22	4,836.80	-763.64	**0.61**
38.	**Spain**	2,865.75	1,815.66	4,681.40	1,050.09	**0.59**
39.	**Sri Lanka**	3,983.87	625.81	4,609.68	3,358.06	**0.58**
40.	**Oman**	2,599.49	2,009.72	4,609.21	589.78	**0.58**
41.	**Kenya**	3,770.34	105.95	3,876.29	3,664.38	**0.49**
42.	**Chile**	690.00	2,992.31	3,682.31	-2,302.31	**0.47**
43.	**Nepal**	3,088.84	543.10	3,631.94	2,545.73	**0.46**
44.	**Colombia**	912.12	2,352.79	3,264.91	-1,440.67	**0.41**
45.	**Ukraine**	519.79	2,657.47	3,177.26	-2,137.68	**0.40**
	Total for 45 countries	294963.20	488811.70	715977.32	-193848.50	**90.51**
	India's Total	300,400.67	490,736.64	790,987.00	-190,335.97	**100**

Source: **Calculated from EXIM Data Bank, Ministry of Commerce, Government of India**

The entire top 40 countries from where India imports, are included in the model. These 40 countries account for 94.32% of total import of India in the year 2012-13. Similarly, India's entire top 30 export destination receiving nearly 80% of India's export are included. All the 66 countries in the *mandala* have 88% of India's total export share. Hong Kong has though been counted as a separate trading entity, but in the *mandala,* it is treated as part of China PRC. Thus, the grand *mandala* clearly incorporates the neo-liberal's position in the framework of primacy and security of the state.

For persistent growth in economy, the basic requirement is energy. India is highly dependent on oil import. The major suppliers are limited. In the year 2012, Russia surpassed Saudi Arabia to become the biggest oil producer in the world. Out of the top 15 biggest oil-producing countries, top 13 are included in the *mandala*. This set alone contributes 72% of world oil production.

Table 3: Top Oil Producing Countries (2012)

Country	**Share of world Oil Production (%)**
Russia	13.1
Saudi Arabia	13.0
USA	8.6
China	5.5
Iran	4.5
Canada	4.1
Iraq	3.9
UAE	3.7
Kuwait	3.5
Mexico	3.4
Nigeria	3.3

Source**: www.bloomberg.com**

But, oil import is causing the worsening of current accounts deficit (CAD) in India. This has forced the policy makers to harness the nuclear energy. At present, India is producing only 3.6% of energy from nuclear fuel. There are 21 operating reactors with net production of energy at 5302 Mwe. 22 nuclear new reactors are under construction and 35 are under proposal with a plan to expand nuclear energy production to 40,000Mwe. This will require uninterrupted supply of nuclear fuel viz. uranium, which is found in limited supply in handful of countries. At present, India is consuming only 913 tonnes of Uranium which is a meager 1.38% of the world consumption.

Table 4: Uranium requirements of Major Countries (2014)

Country	**Tonnes of Uranium**
USA	18816
France	9927
China	6296
Russia	5456
South Korea	5022
Japan	2119
Ukraine	2359
Germany	1889
Canada	1784
UK	1738

Source: **World Nuclear Association**

Among these top consumers of Uranium fuel, Canada, Russia, USA and China have some reserves and production, but other countries like France, South Korea, Ukraine, Germany and UK will be competing with India for import of nuclear fuel from few countries of supply. Japan may steer out of the race after the tragic disaster at Fukushima in the wake of Tohoku earthquake and tsunami in 2011. But, for India, this will require Herculean effort if India continues to pursue policy of increasing contribution of nuclear energy in the energy-basket.

The largest producer of Uranium in 2013 was Kazakhstan. Niger was ranked fourth. Kazakhstan alone had share of 38% world output in 2013. Both these countries have been included in the *mandala*. Niger, South Africa, Brazil has major reserves. Out of top 10 countries with uranium reserves, 9 are included in the *mandala.* India has tied up with Kazakhstan, Australia and Uzbekistan for import of uranium. In future, major mines are anticipated to be discovered in Gabon, Kyrgyzstan and Mongolia. Mongolia and Gabon are included in the outer 16-petaled circle.

Table 5: Uranium Output and Reserve (Top 10 countries, 2013)

Country-wise Output ranking (2013)		*Known recoverable Reserve of Uranium (2011)*	
Rank	**Country**	**Country**	**% of World Reserve**
1	Kazakhstan	Australia	31
2	Canada	Kazakhstan	12
3	Australia	Russia	9
4	Niger	Canada	9
5	Namibia	Niger	8
6	Uzbekistan	South Africa	5
7	Russia	Brazil	5
8	China	Namibia	5
9	USA	USA	4
10	Malawi	China	3

Source: **World- Nuclear .org**

There is a major policy shift towards harnessing renewable energy sources. Solar energy is in abundance in India. For efficient solar power, two leading thin-film photovoltaic materials are Cd-Te (Cadmium-tellurium) and CIGS (Copper-Indium-Gallium- selenium). These are critical minerals and only few countries have viable extractable reserves. In future, 'green energy" solution will gather steam. Solar power, hybrid vehicles, light –emitting diodes (LEDs) are some of the promising new technology of green energy. But, all such form of energy and energy saving devices require a group of metals called Rare Earth Minerals (REE). REE are a group of metallic elements comprising of Lanthanide series placed at the bottom of the Periodic Table (Periodic Number 57-71), Scandium and Yttrium. These elements show similar optical, chemical and electro-magnetic properties. These element have been termed as 'seeds of technology" by the Japanese engineers as the race for advanced materials in the armament sector, missile technology , high-grade optical instruments, i-pods, LCD, new generation mobiles, green energy, nuclear reactor. REEs are bringing in the happening revolution in miniaturization, durability and speed in the electric and electronic components. But, many of the elements like Neodynmium(used in making world's strongest magnets, laser ranger finders and guidance system of missiles, Europium(used in Pilot display screens, engines of fighter planes, TV, Fuel Cell, Neutron absorber), Dysprosim(used in hybrid engines) will be in short supply in the next 15 years. [37]

China accounted for 94% of global production of REE in 2010. China has the discovered world reserve of 48%. Brazil and Malaysia are also producing significant amount now. All these nations are included in the *mandala*. Mongolia and Gabon are anticipated to have reserves of REEs. For leapfrogging in advanced material technology which also boosts nation's military strength, India ought to plan diligently for the future needs. Apart from the REE, there are strategic and critical minerals like cobalt, tantalum, manganese, and columbium. These are essential components for building lightweight material, stealth material, propulsion technology, sensor material and electronic & photonic material for high speed communication. Tellurium is required for missile nose cones, infrared technology; Rhenium for jet engine blade and rocket nozzles, beryllium in military optics and missile defense system, nuclear reactor rods, warheads; Hafnium in naval nuclear reactor, titanium in jet engine and aircraft structure. Kazakhstan is emerging as a significant supplier of not only REEs nut also many of these strategic minerals like titanium, Beryllium and Chromium. Then, there are Platinum-Group metals (PGM-Platinum, Palladium, Rhodium, Ruthenium, Iridium, Osmium). These are used in catalytic converters to reduce emission and chemical and petroleum industry for extraction.

Table 6: Amount of Strategic Minerals used in one Jet-Fighter Engine[38]

Mineral	**Amount (in tonnes)**
Titanium	2.7
Nickel	2.6
Chromium	0.8
Cobalt	0.5
Aluminum	0.4
Columbium	0.1
Tantalum	3pounds

Table 7: Critical and Strategic Minerals used in Defense Technology[39]

Minerals	**Applications**
Gadolinium	Protective coating against neutron radiation
Samarium, neodymium, cobalt	Precision guided bombs
Erbium, Europium, Gadolinium, Holmium	LASER in rangefinders
Neodymium, Yttrium	Mine detection technology
Yttrium, Samarium, Gadolinium, Cobalt	Radar system
Gadolinium, Cerium	Optical instruments
Dysprosium	Sonar technology
Gadolinium	Nuclear marine propulsion
Neodymium, Samarium, Titanium, Cobalt	Stealth technology
Nickel, Niobium, Hafnium	Aircraft and rockets
Yttrium	High temperature ceramics

South Africa has the largest reserves of PGM, manganese and chromium. In fact, world's top five mineral producing countries- U.S., Canada, Australia, Russia and South Africa- are in the same circle of the Grand *mandala.*

In a world where circulation of finance determines the investment climate, subsequent production, and trade, major countries with financial wherewithal ought to be incorporated in the formulation of grand strategy. All top 12 countries with more than US$200 billion in forex kitty have been included in the *mandala.* Switzerland and Taiwan finds a place with their financial strength.

Table 8: Countries with Largest Forex Reserves

S. No.	Name	Amount (in billion US $)	Period of Reporting
1	China	3820	Dec.2013
2	Japan	1288	Feb. 2014
3	Saudi Arabia	725.6	-do-
4	Switzerland	543.75	-do-
5	Russia	493	-do-
6	Taiwan	423	-do-
7	Brazil	362.60	-do-
8	South Korea	351.79	-do-
9	Hong Kong	315.90	-do-
10	India	309.44	April,2014
11	Singapore	273.99	Feb. 2014
12	Germany	210.55	-do-

Thus, by analyzing various factors, 66 countries have been selected for a placement over a triangular or petal seat. Rest of the UN-recognized nations and dependent territories will lay in the *bhupar* region, i.e. outside the circles of the *mandala,* the set of concentric sheath. These countries will not get the preferential attention which the countries within the *mandala* structure would get. Nevertheless, as and when needs arise, many among these countries can move into the *mandala* and occupy a place and vice versa for the countries situated inside the *mandala* moving out into *bhupar.*

In the *mandala*, 66 +1 (India at the centre) positions are fixed, but the occupants may change with the evolving dynamics. Congo-Kinshasa, Tanzania, North Korea, Poland, or Argentina might occupy a petal-position or a triangle in the coming decades. Only the elements within the first circle, the circle of neighbouring states cannot change in coming many decades.

In this model, it is assumed that Indian strategic culture is rooted in triadic thinking which had a major influence over Kautilya's composition of *Arthashastra.* Unlike neo-realists, globalization of finance, cooperative paradigm and regionalism have been factored into the model. On the other hand, there is emphasis on military security for the State's perpetual existence. In Kautilya's *rajamandala,* there are 72 constituents to be considered for the policy formulation. In this model, there are 67 constituent states and equally extensive in approach.

VERILY! SRIYANTRA MANDALA OUGHT TO BE THE INDIAN GRAND STRATEGY

We have seen how 43 secondary triangles are generated by interlocking 4 up and 5 down triangles. These triangles appear as arranged in concentric sheath. If one moves from inner to outer side, the inner most triangle (*Sarva Siddhiprada cakra*) is surrounded by a concentric sheath of 8 triangles, thence two sheaths of 10 triangles each. The outermost sheath of 14 triangles is surrounded by two concentric layers of 8-petals and 16-petals, respectively. In the Sriyantra Mandala of the Grand Strategy, only names of various sheaths have been paraphrased with appropriate categories based upon certain common characteristics of countries included in the respective sheaths. The general description of model is given in the Table 9 below.

Table 9: Structure of Sriyantra Mandala of Grand Strategy

S.No.	*Cakra in Sriyantra*	*Geometrical characteristics*	*Sheath in Sriyantra Mandala of Grand strategy*	*Composition of countries*
1	**Sarva Siddhi Prada Cakra**	Single triangle	**Sarva Karmabhumi Kosha**	Self-India
2	**Sarva Rogahara Cakra**	Eight triangles	**Sarva Prativesha Kosha**	SAARC +China
3	**Sarva Rakshakara Cakra**	Ten triangles	**Sarva Ayamvesha Kosha**	ASEAN
4	**Sarvarthasadhaka Cakra**	Ten triangles	**Sarva Uppana Kosha**	UNSC Permanent Members, nuclear powers, financial and economic powers.
5	**Sarva Saubhagyadayaka Cakra**	Fourteen triangles	**Sarva Avantardesh Kosha**	Major suppliers of fuel and resources, market
6	**Sarva Sankshobhana Cakra**	Eight petals	**Sarva Matrimula Kosha**	8 nations with significant population of PIOs with pre-20th century migration history. This is the sheath of frontier Scout from the Past.
7	**Sarva Paripuraka Cakra**	Sixteen petals	**Sarva Bhautik Kosha**	Nations with strategic and Critical minerals supply, global trading choke points. This is the sheath of Rear Guards of the Future.

The six-folded concentric sheaths beyond Indian territory resonates Kautilya's *shadgunya* policy for conducting foreign affairs. For brevity, I have clubbed the 6 concentric sheaths into group of two. This corresponds with the structure of the earth. Since, Sriyantra is the diagrammatic representation of Sri, the goddess of the earth (*bhu)* and prosperity, the resemblances are not surprising. The inner two circles of 8 and 10 triangles each constitute the core, next two the mantle and the group of petal sheath as the crust. The inner core is like the earth's core. It is the densest part in terms of population. Its share in world population is 42.25 %(based upon US Census Bureau's 2014 estimate) with world's four out of top 10 most populous countries occupying a place. This sheath is also India's geographical neighbourhood. The next sheath is India's extended neighbourhood of ASEAN. This fits in well with the Indian government's Look East policy. Just as in the geo-dynamics, major activities take place in the mantle. All the major powers in term of military, finance and strategic superweights are placed in the mantle-structure. In fact, two sheaths of mantle constitute 61.25% of India's total trade in the year 2012-13. Like the earth's crust, the concentric petal sheaths are marginal in terms of density. But, it contains the records of past expansion like fossils and the signs of future activity. The 8-petaled structure comprises of countries and dependent territories with influential Indian diasporas where many a times Indian-origin leaders have been heading the national governments. The outer-petal sheath comprises of nations of future. Advanced technology, green energy of wind, solar, hybrid engines, LEDs will depend upon the critical minerals supplied by these countries. This belt also contains the major uranium suppliers to India in future. For the smart defence system, these nations are critical as supplier of other critical materials.

There are 34 Asian countries out of 44 Asian nations recognized by the UN. Therefore, more than half constituents in the model come from Asia. Hence, the model is Asia-centric. Asia is the pivot of world politics and economic activity. Farther the continents, lesser should be the preferential engagement since power tapers with distance. Continent-wise inclusion of countries in the model are as follow: 11 countries from Africa and 10 from Europe, 4 countries out of 23 countries from North America , 6 out of 12 countries in South America and 2 out of 4 countries of Oceania. Since the ongoing globalization is a regionalized globalization, there is more focus on the region and the extended neighbourhood in the Model. The model fits in well with different strands of thought prevalent in current academic discourse on strategic imperatives for India.

Table 10: Population Characteristics of National actors in Grand Mandala

Population(2014)	**Number**	**Total Number of countries in Grand Mandala**	**Countries not in Mandala**
>10 crore	11	11(China, India, US, Indonesia, brazil, Pakistan, Nigeria, Bangladesh, Russia, Japan, Mexico)	Nil
5 crore-10 crore	15	13(Philippines, Vietnam, Egypt, Germany, Iran, Turkey, France, Thailand, UK, Italy, Myanmar, South Africa, South Korea)	2(Ethiopia and DR of Congo)
3 crore-5 crore	16	8(Colombia, Spain, Ukraine, Canada, Iraq, Uzbekistan, Malaysia, Kenya)	8(Uganda, Sudan, Poland, Algeria, Argentina, Tanzania, Morocco, Peru)
<3 crore	**181**	**35**	**146**

A brief description of six sheaths (*Sadakosha*) is provided along with sheath-wise share in total trade with India in the year 2012-13.

1. ***Sarva Prativesha Kosha*** (सर्वप्रतिवेश: कोष) - Sheath of Neighbourhood

This is an 8-nations neighbourhood sheath comprising of SAARC and China.

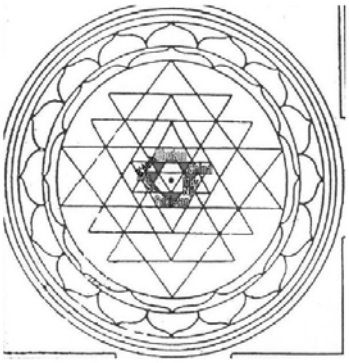
Table 11: Structure of *Sarva Prativesha Kosha (*Population-wise*)*

Countries	**% Share of World Population (April,2014)**
Afghanistan	0.36
Bangladesh	2.13
Bhutan	0.01
China	19.1
India	17.4
Maldives	0.0044
Nepal	0.7
Pakistan	2.60
Sri Lanka	0.8
Total for SAARC + China	42.25

Table 12: Structure of *Sarva Prativesha Kosha (*Trade-wise*)*

Countries	**% Share of Trade with India(2012-13)**
Afghanistan	0.08
Bangladesh	0.73
Bhutan	0.05
China Hong Kong	8.32 2.55
Maldives	0.02
Nepal	0.46
Pakistan	0.33
Sri Lanka	0.58
Total for SAARC + China	13.12%

Figure 11: ***Sarva Prativesha Kosha***

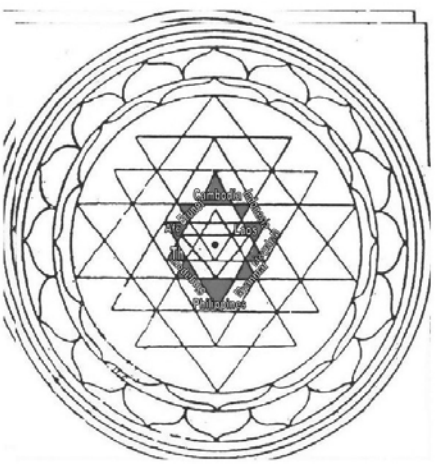


2. ***Sarva Ayamvesha Kosha*** (सर्वआयामवेश: कोष) - Sheath of Extended Neighborhood (10-nations sheath)–ASEAN Population share of world population is 8.45% as in 2014.

Table 13: Structure of *Sarva Ayamvesha Kosha (*Trade-wise*)*

Countries	% Share of Trade with India(2012-13)
Brunei	0.11
Cambodia	0.02
Indonesia	2.55
Laos	0.02
Malaysia	1.82
Myanmar	0.25
Philippines	0.21
Singapore	2.64
Thailand	1.15
Vietnam	0.79
Total for ASEAN	9.56 %

Figure 12: ***Sarva Ayamvesha Kosha***



3. ***Sarva Uppana Kosha*** (सर्वउप्पन्न कोष) - Sheath of Powerful Nations (10-nation Sheath)-

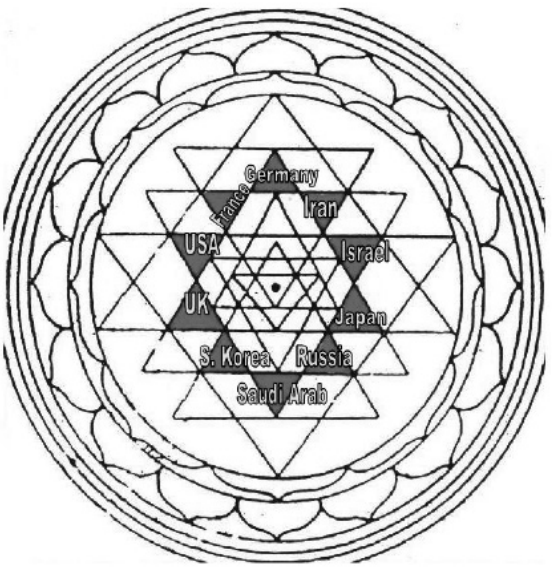
Four permanent UN SC members-US, UK, France, Russia-are in this sheath. World's major powers of technology and innovation viz. US, Japan, South Korea, France and Germany are also in this sheath. Major military powers are also present except India, China, Pakistan which are in the Core and Turkey which is in the outer most sheath. Major financial powers like USA, UK, Saudi Arabia, Japan and Russia are also present.

Population=13.3% of world share

Table 14: Structure of *Sarva Uppana Kosha (*Trade-wise*)*

Countries	**% Share of Trade with India(2012-13)**
France	1.22
Germany	2.73
Japan	2.34
Iran	1.89
Israel	0.77
Russia	0.83
Saudi Arab	5.53
South Korea	2.19
UK	1.88
US	7.76
Total for 10 nations	27.14 %

Figure 13: *Sarva Ayamvesha Kosha*



4. ***Sarva Avantardesh Kosha*** (सर्वअवान्तरदेश कोष) - Sheath of Distant Intermediate Power (14-nation Sheath)

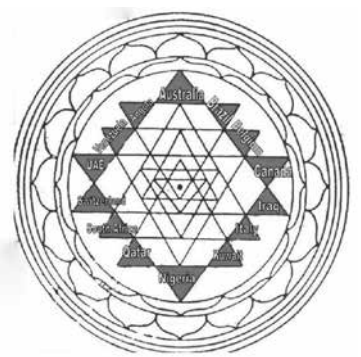
This sheath contains countries that possess raw materials and fuel needed for Indian economy.

Population =9.21% of world's share

Table 15: Structure of *Sarva Avantardesh Kosha (*Trade-wise*)*

Countries	% Share of Trade with India(2012-13)
Australia	1.95
Brazil	1.37
Belgium	1.97
Canada	0.61
Iraq	2.59
Italy	1.15
Kuwait	2.23
Nigeria	1.87
Qatar	2.07
South Africa	1.77
Switzerland	4.21
UAE	9.54
Venezuela	1.81
Angola	0.97
Total for 14 nations	34.11 %

Figure 14: *Sarva Avantardesh Kosha*



5. ***Sarva Matrimula Kosha*** (सर्वमातृमूल कोष) - Sheath of Origin(8-nation Sheath)-Counties with significant PIOs-Front Scout from Past

Population=0.69%

Table 16: Structure of *Sarva Matrimula Kosha (*Trade-wise*)*

Countries	% Share of Trade with India(2012-13)
Fiji	0.01
Guyana	0.00
Kenya	0.49
Mauritius	0.17
Reunion	0.01
Seychelles	0.01
Surinam	0.01
Trinidad & Tobago	0.01
Total for 8 nations	0.71

Figure 15: *Sarva Matrimula Kosha*

6. ***Sarva Bhautika Kosha*** (सर्वभौतिक कोष) - Sheath of Resource(16-nation Sheath)- This is the set of nations which are Rear Guard for Future needs . These possess strategic and critical mineral resources and some of these have strategic security location at global trading choke points.

Population=8.08% of world's share

Table 17: Structure of *Sarva Bhautika Kosha (*Trade-wise*)*

Countries	**% Share of Trade with India(2012-13)**
Azerbaijan	0.08
Chile	0.47
Colombia	0.41
Egypt	0.69
Gabon	0.11
Kazakhhatan	0.05
Mexico	0.72
Mongolia	0.00
Netherlands	1.64
Niger	0.02
Oman	0.58
Spain	0.59
Taiwan	0.89
Turkey	0.76
Ukraine	0.40
Uzbekistan	0.02
Total for 16 nations	7.43

Figure 16: ***Sarva Bhautika Kosha***

Table 18: Structure of *Sriyantra Mandala* (Population-cum-Trade-wise*)*

S. No.	Sheath	Characteristics	Part of Structure	Number of nations	Name of Nations	Share of world Population (%)	Share of Total Trade with India (2012-13)
1	Sarva Prativesha Kosha	**Sheath of Neighbourhood**	Inner Core	8+1 (SAARC +China)	Afghanistan, Bangladesh, Bhutan, China, Maldives, Nepal, Pakistan, Sri Lanka + India	42.25	13.12
2	Sarva Ayamvesha Kosha	**Sheath Of Extended Neighborhood**	Outer Core	10 (ASEAN)	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Singapore, Thailand, Vietnam	8.45	9.56
3	Sarva Uppana Kosha	**Sheath of Significant Nations**	Mantle	10 (Major extra regional powers and UNSC Permanent Members)	France, Germany, Iran, Israel, Japan, Russia, Saudi Arabia, South Korea, UK, USA	13.30	27.14
4	Sarva Avantardesh Kosha	**Sheath of Distant Intermediate Power**	Mantle	14 (Resource-rich Nations)	Angola, Australia, Brazil, Belgium, Canada, Iraq, Italy, Kuwait, Nigeria, Qatar, South Africa, Switzerland, UAE, Venezuela,	9.20	34.11
5	Sarva Matrimula Kosha	**Sheath of Scouts from Past**	Inner Crust	8 (Nation with significant presence of PIOs) Frontier Scout from past	Fiji, Guyana, Kenya, Mauritius, , Reunion, Seychelles, Surinam, Trinidad & Tobago	0.69	0.71
6	Sarva Bhautik Kosha	**Sheath of Resource**	Outer Crust	16 (Rear guard for Future –Reserved Resource base of material, finance and strategic)	Azerbaijan, Chile, Colombia, Egypt, Gabon, Kazakhstan, Mexico, Mongolia, Netherlands, Niger, Oman, Spain, Taiwan, Turkey, Ukraine, Uzbekistan	8.08	7.43
	Total			**67**		**83.97**	**92.07**

Strategic Space(*Bhupar* of Sriyantra) beyond six sheath will contain 156 nation, with16.34% population and merely 8.26% trade share in total trade with India in the year 2012-13.

Figure 17: Grand Strategy *of Sriyantra Mandala*

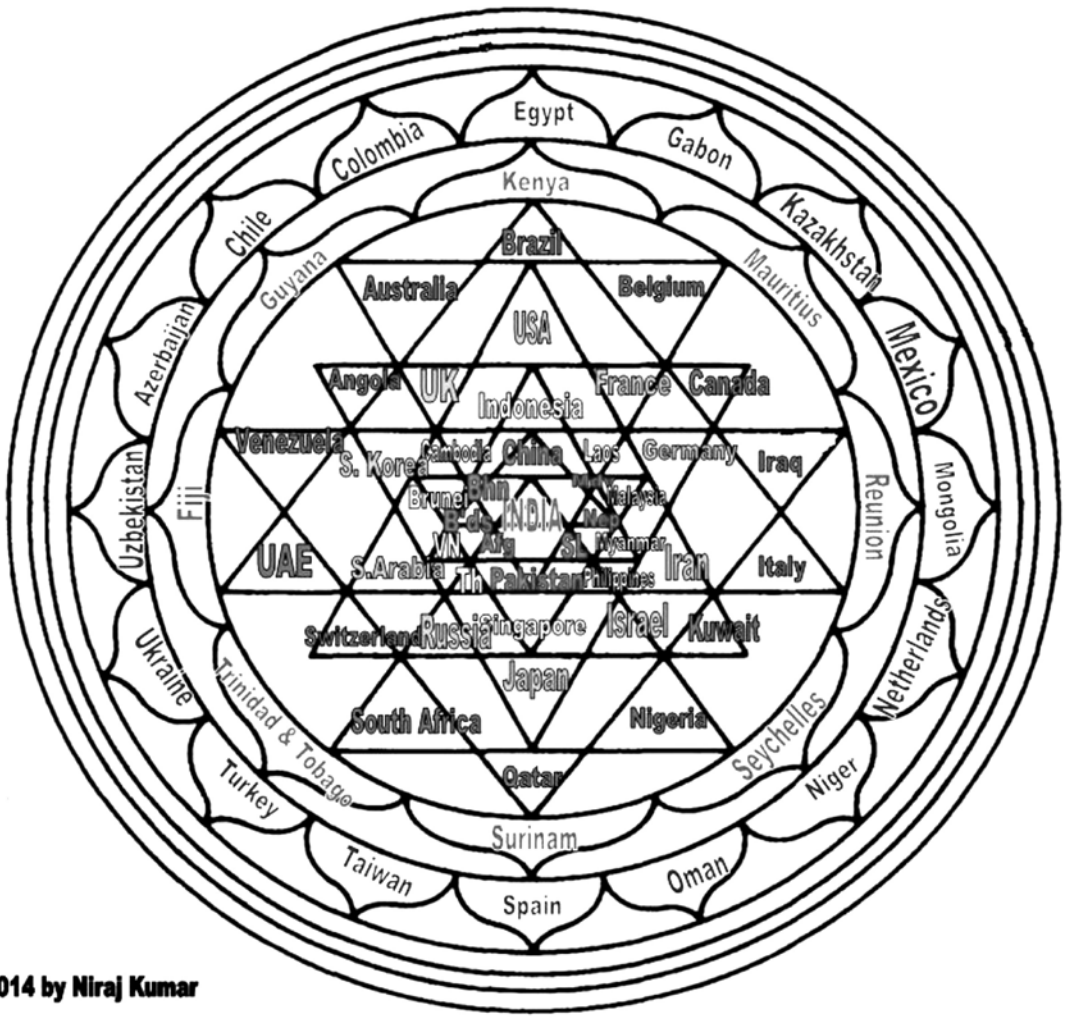


Figure 18: Grand Strategy of *Sriyantra Mandala* - Triadic Perspective

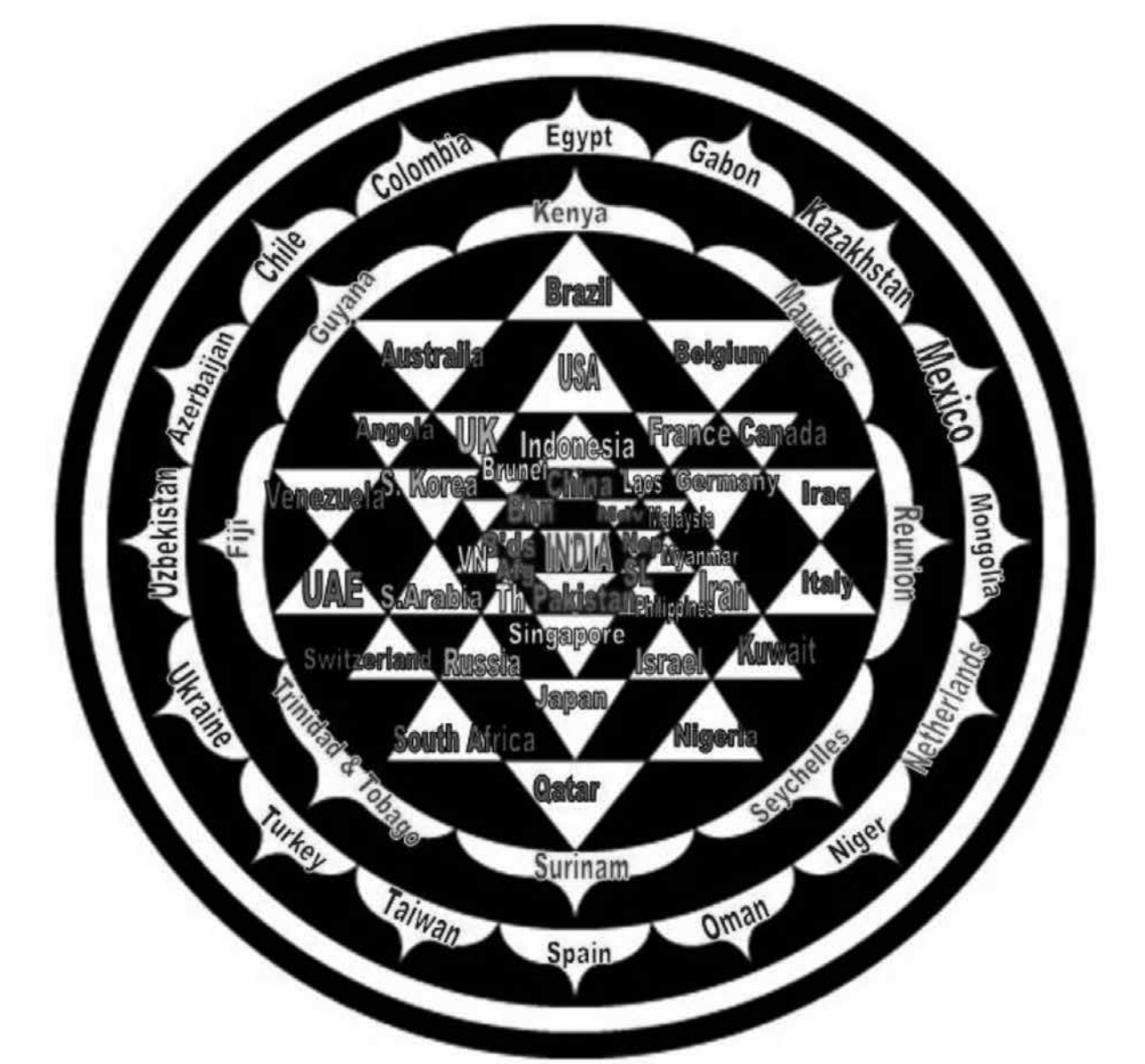


Figure 19: Perspective of the World from Delhi.

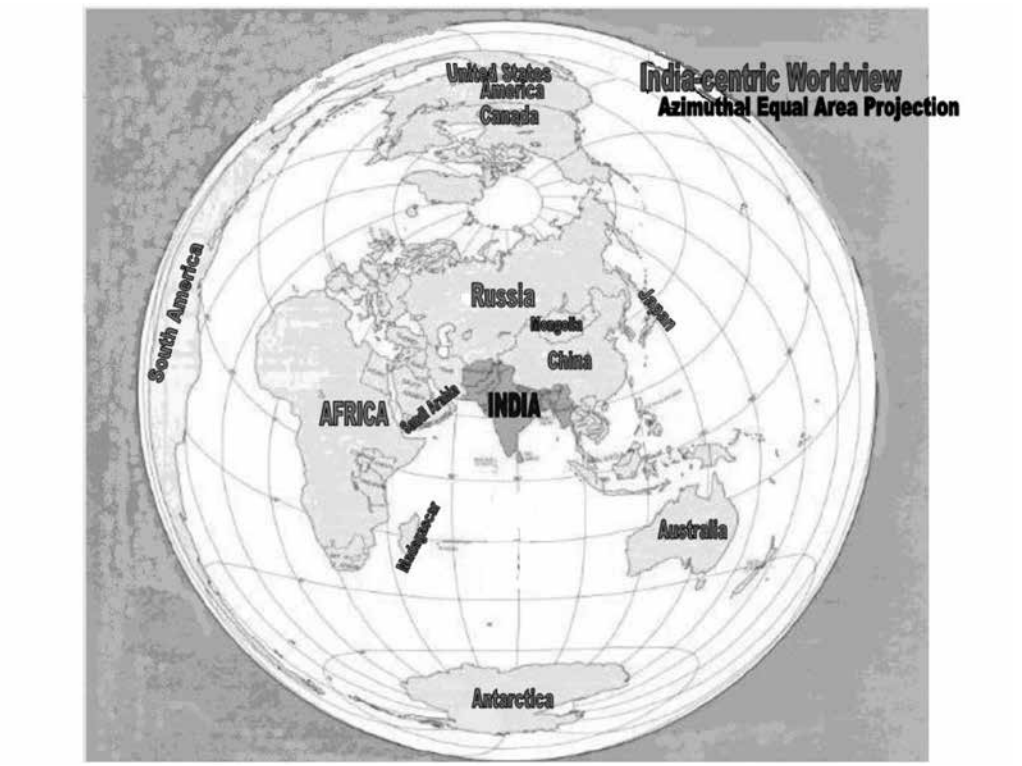
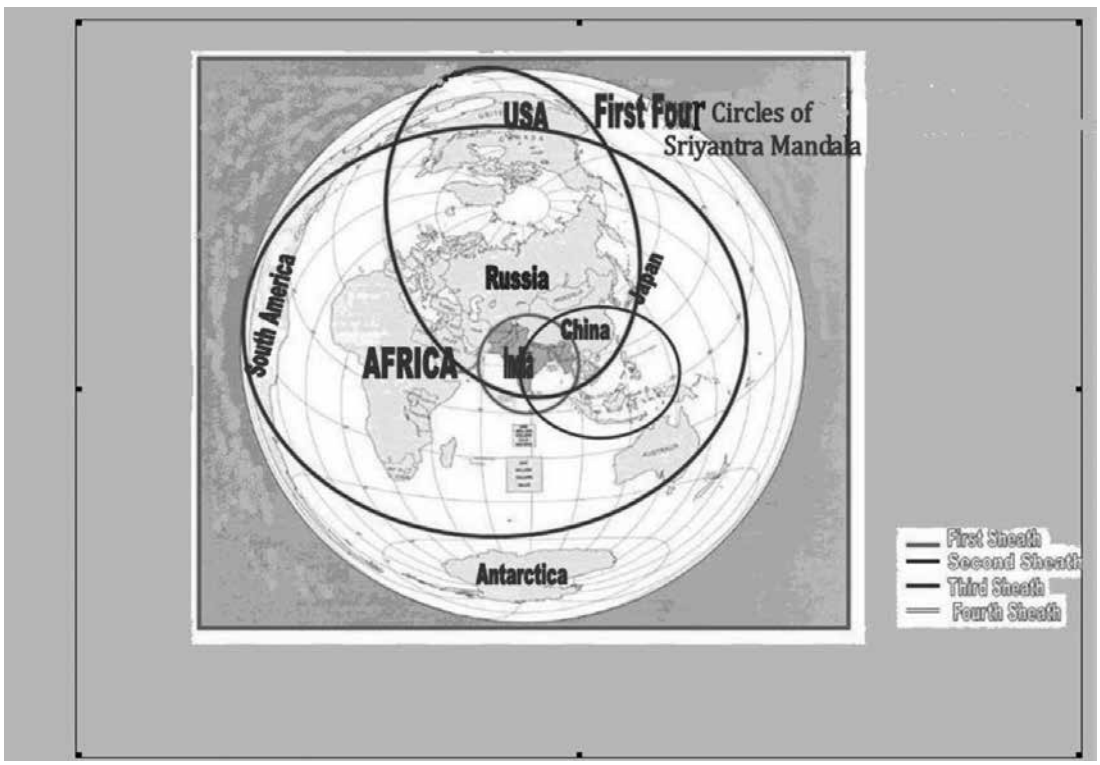


Figure 20: Superimposing Circuits of Grand Mandala over India-Centric Worldview



India's *Cakravyuha*

In the epic *Mahabharata*, there is mention of a *Cakravyuha* as the most complex security zone consisting of seven layers. Arjuna's son, Abhimanyu fought valiantly to pierce the rotating *Cakravyuha,* but he could not succeed and was killed at the seventh gate. This Sriyantra mandala is analogous to the Mahabharat's *Cakravyuha*. After the six protective sheaths comes Indian territory with well-protected borders. It would be imposible for any enemy to pierce this protective shield. Grand in the scope and expanse and all-encompassing in the methods, the Sriyantra Mandala reiterates India's strategic culture of *Vasudhaiva kutumbaka*, the whole earth is a common family .When the nation is in phase of growth, the strategic preference ought to be from inside out and when it is in decline, the order needs to be reversed. Operationalizing such a grand strategy will lead to attainment of four- fold ends - *security, prosperity, stability* and *dignity*. India will rebound as the *Mahabharat*, the Greater India!

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IR Theory

CHANGING THEORETICAL ASPECTS OF BORDER STUDIES: A POLITICO-GEOGRAPHICAL INVESTIGATION

Gaurav Kumar*
Gayettri Dixit**

ABSTRACT

Border studies are fundamental to the discipline of political geography. With the advent of globalisation, spatial processes of de-territorialisation and re-territorialisation have gained significance. There has been a substantial change in theoretical underpinnings pertaining to border studies. Initially boundary study was descriptive in nature and focused merely on the study of its history and location. The approach has transformed with the growing importance of the function of the boundaries. Its significance was appreciated in the form of circulation in the frontier region which resulted in the shift of focus from boundary studies to border studies. With the advent of post-modernism as the dominant paradigm, the discipline of social sciences is also witnessing 'cultural turn'. Earlier border studies were preoccupied merely with the question of 'where' of borders. The significant shift in the terrain of mode of interrogation is apparent with the focus on 'why' for borders.

Keywords: Abstract Territoriality, Check Points, Concrete Territoriality, Cultural Turn, Mental Map, Othering, Social Bordering.

INTRODUCTION

Boundaries, the lines that enclose state territories, have constituted a major theme in the study of political geography. Boundary is the effect of territoriality. The process of boundary formation is accompanied by the sense of territoriality for a place or territory. Historicity suggests that boundaries are never static and permanent rather it changes and adapts to the changing conditions. Boundaries are in fact largely explained in the terms of political realities existing at particular time and space. A political reality associates itself with concepts such as power and sovereignty. It has been considered that power shifts never express at the same place again. A boundary is the most palpable political geographical phenomena and hence is most worked upon and taken up for the study by the political geographers.

FROM STATIC TO FLUID UNDERSTANDING OF BOUNDARIES

Initially, boundary study focused on the study of its history and location. This was too descriptive in nature. The approach transformed, acknowledging the importance of the function of the boundaries and the significance of circulation in the frontier region. It was acknowledged that boundaries are not just lines on the map and is rooted physically but it also

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***Gaurav Kumar** is a Research Scholar at Political Geography Division, Centre for International Politics Organisation and Disarmament (CIPOD), School of International Studies (SIS), Jawaharlal Nehru University, New Delhi. He is presently working on his Ph.D thesis titled *Territoriality of India: A Politico-geographical Investigation*.

****Gayettri Dixit** has recently submitted her Ph.D. dissertation on '*Challenges to South Africa, India, Brazil Partnership in Strategic Mineral Resources*' at Centre for African Studies, JNU. Her M. Phil. research was on '*Geographical Importance and Interest of South Africa in Southern African Development Community*' at the same centre. She has done Masters in Geography as well as in Economics.

facilitates functions (economic, socio-political, cultural etc.) which are very important for the viability of the boundaries. During the early 1960's, the field of border studies was pre-dominantly focused on the study of the demarcation of the boundaries, the lines. But, the field of boundaries and border studies has arguably shifted from boundary studies to border studies. The attention has moved away from the study of territorial line to the border, now the phenomenon is considered as a verb signifying an unstoppable process of ***B****/ordering*.

To understand the concept further it is pertinent to highlight the fact that there are several boundaries other than the political one. Borderland witnesses several boundary functions and circulations which accentuates political boundaries, geographical boundaries, demographic boundaries, cultural boundaries, and economic boundaries. For instance, demographic boundary between Indo-Bangladesh extends beyond the geographical boundary, similarly the situation can be much more complex when political boundary does not respect the geographical boundary of the area, this often give rise to border disputes like in the case of India and Pakistan. European Union is example where economic boundaries extend and encompasses all other boundaries in Europe. There has been growing realisation that there is significant differences and similarity between the socio-political communities that a boundary divides. Cultural landscape approach is also applied to understand the processes better.

MAJOR STUDIES PERTAINING TO BOUNDARIES

One of the earliest systematic studies of boundaries is to be found in *Semple*'s (1911) famous work, *'Influences of Geographical Environment'* in her chapter on "Geographical Boundaries". She postulated that "*nature abhors fixed boundary lines*". Boundaries are never in equilibrium and are always fluctuating and the frontier, that is, the uninhabited area between two civilisation forms the best scientific boundaries which are prior partitioned and protected. The dynamic view of boundaries is not as of artificial lines but as variable zones, and always under pressure from the cultural and physical environment. This was in close accordance with Ratzel's "*Organismic Theory of State"*. She developed the very idea advocated by Ratzel (*Mingi,* 1963).

Much of the boundary studies have been written during the period of First and the Second World War and its aftermath. These studies were largely utilitarian in character. The researches were busy in analysing 'goodness' and 'badness' of a boundary for the military purposes. These were part of the search for the causes of friction between the nation and for finding means of avoiding the worse. The post-war bordering initiatives and manoeuvres led to unprecedented growth in border related studies. The restructuring of post-colonial world of Asia, Europe, Latin America and Africa saw emergence of new boundaries and dissolution of the other. During the dissolution of colonial boundaries and onset of the Cold War, boundary studies further gained significance. The delineation and formation of boundaries for the new post- war countries required in-depth and multifaceted study of processes and phenomenon of the region; this also enhanced the scope of border studies.

During the classical era of border studies, "***Where***" of borders was focused upon. In the late 19th and early 20th century, the study involved questions such as, *where* is the border located, *how* did it come about, evolve, change over time or became the topic of (military) disputes and *what* are the consequences of its (change in) location.

Scholars believed anti-structural borders as bad borders. These do not correspond to the physical condition of the earth surface or to the distributional patterns of the socio-cultural areas. They do not have a true frontier where the state borders can act both as a bridge and a filter, protecting the state organisation at the same time that it allows inter-state interaction trade to flourish. Typical of such borders are those established after wars by victorious powers. These bad borders, having violated the natural laws of border-formation would be the source of instability and conflict in future in Maul's opinion (*Houtum*, 2005).

The classical era started with Friedrich Ratzel and his view of the borders of nation states. If Ratzel is compelled to be considered as the father of modern political geography of borders, then the scope and ambit of border studies shrinks. This misconception is heavily criticised by John Agnew who called it as "*territorial trap of the state*". Needless to say there were existence of borders and political boundaries before the advent of nation- states and each had some stories attached to it. There are memoirs and monographs written on the validity and significance of these boundaries. In the meantime, the discipline and approach of political geography in general and border study in particular has evolved and developed. Now the focus is given on the question pertaining to *"**How**"* of borders. Though the study pertaining to "How" of borders are majorly taken up by the other disciplines not pertaining to political geography but still political geography is catching up in the academic race. One of the key merits of past few decades is the widening of epistemology and ontology of borders (*Houtum*, 2005).

BORDERING: A DAY TO DAY ATTEMPT

In past few decades, discipline of geopolitics and political geography has turned focused from boundaries as the political limits of the states, to borders as the socio-territorial constructs. The interest for the studies of border, in the meaning of the construction and the representation of difference, could be considered as the off-spring of the post-modern turn in the social sciences. Questions such as, *how* borders are made in terms of symbol, signs, identifications, representations, performance and stories have become of paramount interest. There are two important things, "*Mental Map"* and "*Check Points"* which a considered important for the borders to function and to maintain its viability (*Migdal*, 2004). Mental map is basically the shared history and geographical experiences of a community, accentuating the feeling of oneness. Narratives and stories play a dominant role in its formation. For example; partition of India and Pakistan had left many stories which are fiction as well as non-fiction. Such narration of the past impinges on our minds and strengthens the *Mental Map* making Indo- Pakistan border harder. *Check Points* can be actual as well as virtual. Actual check-points are in the form of passport and visa check points and virtual is the *otherness* induced by the language ascent, dressing, and food of a particular community.

Such epistemological awakening has changed scope of whole discipline of border studies. Post-modern turn is accompanied by the philosophy of post-structuralism in which major contributions have been made by Derrida, Foucault, Lacan, Deleuze, Guattari and a horde of French thinkers "*where they decode and deconstruct the day to day attempts of bordering where X tries to border or territorialise Y"* (*Houtum*, 2005). State acts as a bordering agent for the citizenry. Various policies and local laws make people of the respective area feel the functioning of exclusion and inclusion.

The border study cannot be separated from identity and territorial questions. Unlike early morphological border studies, nowadays much engagement is taking place between students of nationalism and territoriality and those who study borders. Nationalism always involves a struggle for land, or an assertion about the right to land. In the primordialist tradition of nationalism, the concept of "*homeland*" was the central focus. The geographic outcome of national conflicts is often new borders, new borderlands and new relations between bordering neighbours. A starting point for border studies therefore should be analysis of identity formation and change, with territorial dimension as the central theme. Rather following the primordialist tradition of equating national identity to a specific piece of land based on a historical claim, we ought to see borders as the social construction of recent origin and therefore place the study of borders into the World -System tradition of political geography.

The important development of subsequent century is the unstoppable attempt to convert boundary zones and frontiers to smoothen and straighten boundaries so that the problem of overlapping sovereignty comes to an end. The medieval to modern concept of boundary is bound with the rise of Nation-States. People in the medieval age were known for changing alliances and loyalty. Rise of the nation-states was preceded by the rise of national consciousness that came as a consequence to the advent of scientific revolution and technical innovations making the 'simultaneity of experience as a collective" possible. This accentuated the end of Dark Age in Europe and advent of the Renaissance. Collectivism was replaced by individuality. As the Nation-State emerged, the old concept of boundary had to be changed.

Post-colonial boundary formation in the continent of Africa by the European colonisers was the most pathetic and deplorable attempt on their part. These were geometric boundaries (non-representational) carved out on African landscape. These borders did not respect the geographical realities of the region. The divided cultural areas of Africa present continent- wide problem. Many national politicians would regard attempts to unite culture areas as pandering to tribalism and as being diametrically opposed to their central task of nation building. Simple new- line solutions are not always possible as people are often inter-mingled and spread and scattered geographically. And if a central government arrive at the decision to evolve a new line or boundary, they are in fear of negating their sovereignty and projection of their weakness (*Griffith*, 1986). The recent balkanisation of Sudan into two countries can reveal the realities persisting in these areas. North Sudan is ethnically different than the South Sudan. There were continuous incidents of ethnic violence in Sudan for a decade or so. Geometrical boundaries also make resource viability of this region complex. While demarcating boundaries in Africa, natural ecosystems were not taken care off and were arbitrarily divided. Consequently resource politics in this region has gained currency ranging from hydro-politics to mineral politics.

Boundaries are very much related to the idea of nationality. Ideas about boundaries vary in space and time, and reflect differences in national goals and objectives. The French (who possess somewhat geographically well-defined territory)

were pleading in favour of natural laws to be the basis of national boundaries, but the Germans, who were not fortunate in this respect, when faced with the task of creating a unified Germany, pleaded in favour of the concept of boundary on the basis of folk and nationality. Many German philosophers like Fichte believed that common language and culture constituted a natural law, higher than that of rivers and mountains (*Dixit*, 1987). The principle of self-determination on the basis of linguistic nationality, established at Paris in 1919, became the guiding principle for fixing boundaries not only for the post-First-World War Europe, but worldwide.

Border studies have traversed from the old inquiries to the new one. During the Cold War and immediately after its end, border research focused on sharpest lines which were highly militarised. These zones were mostly in East Asia, between Israel-Palestine or South-African fences with Zimbabwe. The focus is now shifting towards new fences which are being made in the present world order. For instance US-Mexican border, where there are new issues which are coming up and which needs a thorough attention. Research requires scrutiny of zones pertaining to maritime boundary issues developing between European Union and Africa, Arabia and Horn of Africa, new issues like 'Global Apartheid' of the EU's external border regime. European scholars express these phenomena as "*gating of EU space*". European Union though boasts itself to be the epitome of liberal society and democracy and acclaims itself to be much better than the American standards. But from the vantage point of immigrants seeking economic appraisal and rehabilitation, discrimination is rampant. The external borders of EU have stringent checkpoints where biometric analysis is used to segregate the one who are considered as others. It can be said though EU internal boundaries are fading away but the external boundaries are becoming much more sharp and impregnable *(Sideway,* 2001).

BORDER STUDIES: A MULTI-DISCIPLINARY APPROACH

Other trends in border studies are now in favour of inclusion of various methods so as to give colours to this field of study. Methods like ethnography, photography, archival analysis, local histories are included. Basically mixed method is being developed to get a better picture of the area or the borderland in question. For several decades, there is academic anxiety regarding whether to carry on with "Case Study" approach for the study of borders or to situate these border peculiarities in broader and structured politico-geographical theory and discourses. Nowadays "Case Study" method is considered to be below standard in academic pursuits. It is considered to be very descriptive lacking explanation and insight. Further it is thought that what the use of case study, when it cannot arrive at certain generalisations. Due to the intrusion of cultural studies and other social sciences in the border studies the field is been re-energised. More multi-disciplinary the border studies will become, more it will turn towards situating itself in the wider politico- theoretical framework.

Border study in the current dynamic world of flows and networking has to be related with issues pertaining to changing spectrum of sovereignty**.** Social bordering has now gained enough attention in the academia. This is very interesting field of study where day to day human constructions are being analysed. Such bordering can range from studying symbols used in demonstrations to the government statistics about displaced communities. A temple in the middle of a village or in that case a church or masjid can infuse the feeling of otherness to some people who do not belong to that community. A skeleton symbol with red background can alert one to not enter into that vicinity. Religious rituals can accentuate the process of '*Othering*' and consequently bordering in the society. Nuances in dressing can lead to this process. The tradition of 'Hijab' and 'Burqa' worn by Muslim women, the turban worn by Sikh community, saffron attire worn by Hindu men, all differences creates a type of *boundedness*. Statistics as the science of State has played havoc in the societies. Statistics of human beings enumerate borders. For instance, census in India was adopted by the Britishers so as to divide Indian masses. It was considered to be the most important tool for this purpose. Still today, numbers are beening played upon by the politicians to garner support of a particular community in the election but eventually creating a social separation within the community.

CONCLUSION

Borders are the product of interaction between concrete territoriality and abstract territoriality. Initially the border studies largely focused on the study of concrete aspects of borders but after 'cultural turn' in social sciences, abstract aspects of borders are rigorously worked upon. Border is no longer the boundaries of nation-state to be guarded by the standing armies. It is ubiquitous. To fend off the threat to the borders, the State deploys the surveillance system from micro to macro-level, thereby hardening the State's control over the populace. The State no longer governs through the might of the static armies, rather it has developed the pool of dynamic resources to guard, erect and erase borders within its territoriality at its will. The emergence of Benthamite Panopticon has become reality. The concrete and abstract couldn't have better handshake than in the realm of political geography.

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Politics

DOES TURKISH MODEL OF DEMOCRACY LACK EMPIRICAL VALIDITY IN THE ARAB WORLD? A COMPARATIVE ANALYSIS

Ahmed Raza*

ABSTRACT

A larger section of scholars in the Arab world and West have been acknowledging Turkey as an effective model of democracy for the emerging democracies after Arab spring due to its ability to maintain balance between Islam and democracy. But, this paper explores how Turkish model of democracy does not fit into the Arab world. The study will also highlight the weaknesses of the Turkish model and offer a new perspective. The civil-military engagement and the dominance of the concept of secularism over Islam that characterizes modern Turkey cannot be simply implemented in Arab countries. The study will also examine various socio-economic, cultural and political differences between Turkey and the Arab world and explore the non-viability of the full application of the Turkish model in the Arab region. Turkey has always benefitted from a diversified economy, a lengthy track record of solid economic management and structural reform, geographical proximity to Europe, integration with European markets, and the effect of its associate membership in the European Union (EU) which more or less, help Turkey maintain democratic pattern of governance and weather the factors that create instability on communitarian identities.

Keywords: Arab world, Islam, Secularism, Turkish model.

INTRODUCTION

Following the Arab spring , scholars, academicians, political scientists and political leaders from the Arab countries such as Tunisia, Egypt , Libya are making a beeline to offer to the West various prescription about the future course of their action in the Middle East and North Africa (MENA). After the Arab spring, these countries have been looking ahead for their democratization process so as to eradicate the authoritarian regimes of past. In order to usher in democratization process in the Arab countries, there has been much debate about what kind of democracy could be the best example considering the particularized historicity and socio- political dimension existing in the Arab world. In this context, Turkey has been acknowledged as a potential model for the Arab world democracies due to its ability to establish a fine balance between Islam and democracy, apart from other significant thing. Therefore, the democratic pattern of Turkey could be seen as an ideal democracy and a new word, *Turkish Model,* could find a place in dictionary of political science. The debate upon the importance of "Turkish Model' spread like the panacea for all ills in the Arab world when the Turkish Economic and Social Studies Foundation (TESEV) conducted a survey on political attitudes in Egypt, Jordan, Lebanon, Palestine, Saudi Arabia, Syria and Iraq. More than 65 percent of respondents in the survey said they felt Turkey could be a model for the region, because of its perceived mix of Muslim piety, democratic system of government and economic success achieved under the government of the religiously conservative Justice and Development Party (AKP). [1]

Before assessing the viability of Turkish model for the Arab world, it is indispensable to examine Turkish model

***Ahmed Raza** is Visiting Faculty (Political Science) at Faculty of Islamic Studies & Social Science, Jamia Hamdard, New Delhi. He is also a Senior Research Fellow at the Academy of International Studies, Jamia Millia Islamia, New Delhi.

from various perspective. Turkey has been experiencing democratic government since 1923, but it came out as successful Muslim democracy among the Muslim nations only after the arrival of the new regime of Justice & Development Party (AKP) in the last few decades. Although, the democracy in Turkey itself witnessed a number of changes since it became a republican country, it is a fact that prior to Arab spring, not much academic attention was paid on Turkish democracy and its characteristics. Whether this model fits into the Arab world at all or it requires a unique mould of democracy, can be explored only after understanding the much-touted Turkish model and its feature as well as the different socio-political condition of the Arab.

TURKISH MODEL

This term originated in connection with the Arab Spring . Arab Spring itself is a pejorative term used to describe the accelerated political changes in various Arab states such as Tunisia, Egypt and Libya that had overthrown dictators in 2011 and begun building new political and economic systems. Turkish model refers to the focus on Republic of *Turkey as "an example of a modern, moderate Muslim state*." It has been seen as combining a secular state and constitution, with a government run by a political party or political parties (For instance Justice and Development Party, AKP) with "roots in political Islam". The AKP, led by Recep Tayyip Erdogan, has ruled Turkey with a large majority in parliament since 2002. During this period, Turkey cultivated good relations with the West, but also cordial ties with the Islamic Republic of Iran and a more pro-Palestinian policy. It has vigorously conducted, "substantially free and fair" elections, a vibrant culture, and has undergone an economic boom, developing a "large and growing middle class." In sum, four main factors have been identified as central to the Turkish model and its appeal in the Arab region: i)successful balancing of Islam and democracy in a secular political context; ii) economic growth and development; iii) bringing the military under government control; and iv) regional influence, including championing such causes as Palestinian rights and statehood.

However, many scholars and political leaders have expressed reservations about the viability of the Turkish model for the emerging Arab democracies, particularly with regards to the differing historical experiences, the role of Islam, and Turkish perceptions of secularism when compared with the Arab countries.[5]

TURKISH MODEL LACKS EMPIRICAL VALIDITY IN THE ARAB WORLD!

The entire Arab world has been victim of the overall inefficiency of the governments, high rates of unemployment and underemployment, mass poverty, authoritarianism, and lack of democracy. The well-educated young masses have developed high level of frustration as a result of stagnancy and inefficiency of the regimes whose only purpose was to maintain the status-quo. Therefore, there has begun a search for democratization process where these factors could be sorted out through new government. In this process, the idea of Turkey being a model for the Middle East and North Africa is surely disputable on many grounds as it has many flaws. More interestingly, Turkey does not project itself as a model for anyone. President Abdullah Gül, Prime Minister Recep Tayyip Erdoğan and other Justice and Development Party (AK Party) officials have said this on many occasions.

There has always been a gap between the expectation of the Arab countries in terms of their governance model and existing Turkish model of democracy. The thrust for better governance, combating corruption, establishing institutions of democracy, free and fair elections and better economic policies has been moving round the Arab countries after the Arab spring. Therefore, the suitability and feasibility of Turkish democracy with Arab countries could be assessed on following ground: secularism, democracy and religiosity.

SECULARISM, DEMOCRACY, AND POLITICAL ISLAM

The most important justifications for presenting Turkey as a model are its democratic system and successful experimentation with the compatibility of Islam and popular democracy. These justifications, however, fail to convey several supporting pillars that have been equally instrumental in shaping modern day Turkey.

Turkey is one of the few states in the Muslim world that has openly embraced and strictly enforced the principle of secularism. Yet secularism alone would not have been enough to enable the Turkish model to gain grip throughout the Arab world; on the contrary, many cite Turkey's secularism as an impediment to the acceptance of the Turkish model in the Middle East. Rather, the feature that makes Turkey attractive throughout the region is the fact that it is a predominately Islamic yet secular country that has successfully accommodated the rise of political Islam. In other words, the "Turkish model" is really about the accumulation of Islamist political power in a formally secular and democratic setting.[6]

It is also important to highlight that Turkey differs from much of the Muslim world, and the MENA region in particular, with regard to the appeal of Islamism. Since the 1980s, most Muslim governments, including those of South East Asia,

South Asia, and the Middle East have Islamized policies or appropriated Islamic symbols and values to improve their legitimacy and counter the appeal of Islamic opposition.[7] The most significant exception is Turkey, whose leaders have never been pressured to Islamize policies or appeal to Islam.[8] This could well be due to the restraint the secular regime has imposed on Islamists in Turkey, but an equally likely explanation is that the Turkish population has not expressed significant demand for Islamic policies or law.

ANTI- SECULAR PROVISIONS IN THE TURKISH CONSTITUTION

There are two provisions in the Turkish Constitution which are inconsistent with the principles of secularism. The first one revolves around the existence of the Department of Religious Affairs. Article 136 of the 1982 Constitution establishes a Department of Religious Affairs (*Diyanet Isleri Baskanligi*) within the general administration. The employees of the Department are civil servants, and its funds are appropriated from the administration's budget. The Department is responsible for the regulation of the religious life of all Muslims living within the country. Among other things, the Department of Religious Affairs appoints religious officials, including imams, pays the stipends of religious officials, and directs the administration of more than 70,000 mosques.[9]

On the other hand, there is also controversial provision under Article 24 of the Turkish Constitution about mandatory religious education. It means education and instruction in religion and ethics shall be conducted under Turkish state supervision and control. Instruction in religious culture and moral education shall be compulsory in the curricular of primary and secondary schools (*Turkish Constitution of 1982*, Article 24). Mandatory religious education undermines the principle of "equality of opportunities" because the children of citizens who do not consider themselves to be Sunni Muslims are forced to take courses based on this specific interpretation of Islam which seems to be both illiberal and incompatible with democracy.

ISSUE OF HEADSCARF BAN

The wearing of the Islamic headscarf at Turkish universities is a relatively recent phenomenon, which started in the 1980s and subsequently led to the adoption of various regulations and legislation related to the issue (*Wing & Varol,* 2005, p. 36). The Cabinet issued the first regulation addressing the wearing of Islamic headscarves in universities in 1981. On the other hand, a plethora of legal regulations have been adopted, some banning the headscarf, others lifting the ban. Over the course of time, this issue has become a central point of concern within the debate of secularism and its role in Turkey. Some find the ban on headscarves to be incompatible with secularism while others would disagree.[10]

CIVIL-MILITARY RELATIONSHIP

Apart from other things, civil-military relationship has also contributed significantly in sustaining democratic regime in Turkey. There exists harmonious and cordial relationship between civil and military. Since the 1930s, the military has appointed itself as the guardian of the basic principles of the regime. As a result, the military's influence over Turkey's politics has extended beyond national defence and security issues; it has been shaped by the ethics of guardianship. It has launched four military coups and removed four civilian governments since the Republic's establishment. Two of these coup happened as a result of the direct military intervention in 1960 and 1980, while a third was carried out in 1971 by memorandum. Finally, in 1997, Prime Minister Erbakan from the pro-Islamist Welfare Party was pressured by the military into stepping down.[11] Still, the military has enjoyed a high degree of popular respect as these military heads have never shown interests in continuation of the military regimes. The army regime returned back to their barrack after the civilian government assumed charges. These kind of relationship cannot be traced in the Arab regime particularly, Egypt. Hence, Turkish model of democracy could not find much support in the Arab regime.

MARKET STATE RELATION

The second pillar of the Turkish model lies at the Turkish Islamists government's special connection with the economy and market. Turkish Islamists have a market-oriented approach where economic successes and gains, not pure ideology, are the main driving forces. The liberal spaces created by Turgut Özal's reforms paved the way for the emergence of this type of market-based Turkish Islamism which is lacking in the Arab world.[12] The crucial decision of the Turgut Ozal government to integrate Turkish economy with the global economy also had a disciplining effect on political governance. As a capital-scarce country, Turkey's growth depends heavily on the availability of foreign capital. Therefore, the cost of populist policies that divert capital flows increased considerably. This was especially true after the 2001 crisis, when Turkey began to attract ever-larger flows of international finance. Populist policies would have made Turkey less attractive as a destination for portfolio and direct investments, undermining economic growth. In short, when

Turkey fully embraced globalization, it also embraced globalization's inherent discipline, thus consolidating governance reforms and strengthening the separation of political and economic powers.

LINKAGES TO THE WEST

The establishment of Turkish democracy was more or less the result of westernization approach and the efforts made by Ataturk towards modernization. Ataturk had taken route to western ideology of liberty, equality, freedom in his quest for modernizing Turkey. Hence, Turkey did not find any kind of difficulty or resistance at mass level against such kind of ideologies and values. Although Turkey fought its national war for independence against the imperial powers of the West, Turkish nationalism did not come into being as an anti-Western ideology. In this respect, Turkish nationalism is much different than the brand of Arab nationalism identified with Gamal Abdel Nasser, which was clearly and more virulently anti-imperialist and anti-Western.

On the contrary, Mustafa Kemal Atatürk's way forward for Turkey was to build a solid relationship with the West. He spoke of the need to boost Turkey into the league of the most "civilized" nations. His means for meeting this challenge was modernization by way of Westernization. The drive to Westernize had a national identity component. The aim was to create a society based on what were then still perceived to be Western values: secularism, democracy, and gender equality. Also, there was a foreign policy component to this project. The best way to boost Turkey's modernization efforts was to gain membership in the West.[13]

STATE TRADITION AND PROFESSIONAL BUREAUCRACY

With the existence of the Turkish republic since 1923, democratic procedures and its mechanisms have been maintained effectively through professional bureaucracy. The bureaucracy has strengthened the foundation stones of Turkish democracy and state tradition. Therefore, all the state institutions and machineries of Government played vital role in checking and balancing system of democracy. Turkish democratic government being a unitary government has maintained the integrity and internal security in appropriate order. The concept of decentralization in Turkish democracy has existed only in terms of administrative convenience and in order to provide the basic services to the common people. This kind of governance proved fruitful in sustaining the top-bottom approach of democracy. After all, it can be urged that Arab world has long way to go while replacing autocratic regimes into Turkish model democracy.

ROLE OF CIVIL SOCIETIES AND DEMOCRACY

Democracy of every nation requires proper checks and balances mechanism, and it is largely possible through civil society only that citizens protect their rights as individuals, force policy makers to accommodate their interests, and limit abuse of state authority. Civil society also promotes a culture of bargaining and provides future leaders with the skills to articulate ideas, form coalitions and govern. The preconditions for democracy are lacking in the Arab world partly because Hosni Mubarak and other Arab dictators spent the past half-century emasculating the news media, suppressing intellectual inquiry, restricting artistic expression, banning political parties, and co-opting regional, ethnic and religious organizations to silence dissenting voices. But the handicaps of Arab civil society also have historical causes that transcend the policies of modern rulers. Until the establishment of colonial regimes in the late 19th century, Arab societies were ruled under *Shariah* law, which essentially precludes autonomous and self governing private organizations. Thus, while Western Europe was making its tortuous transition from arbitrary rule by monarchs to democratic rule of law, the Middle East retained authoritarian political structures. Such a political environment prevented democratic institutions from taking root and ultimately facilitated the rise of modern Arab dictatorships.[14]

CONCLUSION

The debate upon application of Turkish model of democracy into Arab region after the Arab Spring is not a new phenomenon. This has earlier resonance in Muslim world especially Central Asian region which looked at the Turkish model after the collapse of USSR. Arab world lack in practical orientation to adopt Turkish model of democracy. Still, Turkish modernization experience is important for the region and much more applicable than the Western modernization or the Iranian model of theocratic state. It has been argued that in light of the demands and needs of the Arab revolutionaries who helped overthrow the authoritarian regimes and still supervise the political situation from the streets, the Turkish model offers valuable lessons in terms of transition to market economy, integration into the global market, rapid economic growth to overtake the population growth and reduce unemployment, efficient governance and accountable government and most importantly the re-organization of the relations between political Islam, secular parties and citizens and the military in the post-Arab spring.[15]

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International Trade

INDIA'S TRADE RELATIONSHIP WITH SAFTA COUNTRIES: A REVIEW

Hafiz Wasim Akram*
Md. Daoud Ciddikie**
Prof. (Dr) M Altaf Khan***

ABSTRACT

The South Asian Free Trade Area (SAFTA) is an agreement between the members of SAARC nations namely India, Pakistan, Bangladesh, Bhutan, Sri Lanka, Afghanistan, Nepal and Maldives which was reached on 6 January 2004 at the 12th SAARC summit in Islamabad. It created a free trade area of 1.8billion people in the region. The seven foreign ministers of the region signed a framework agreement on SAFTA to reduce customs duties of all traded goods to zero by the year 2016.However, SAFTA is an initial step in the evolution of the SAARC as a regional trade bloc and an economic union. There is much speculation about its favourable effect on intraregional trade. As the biggest, and the most industrialised trading partner among the SAARC countries, India has to take a lead in making the Regional Economic Cooperation a reality in South Asia. This study highlights India's trade and trade relationship with SAFTA at large and with each members of the trade bloc in particular. The study also highlights the macroeconomic overview of the region citing several indicators.

Keywords: Customs Duty, MoU, Regional Economic Cooperation, SAARC, SAFTA, SAPTA, South Asia, Tariff Elimination, Trade, Trade liberalisation.

INTRODUCTION

Trade is the transfer of ownership of goods and services from one person or entity to another by getting something in exchange from the buyer. Trade is sometimes called commerce or financial transaction or barter. The original form of trade was barter, the direct exchange of goods and services. Later, one side of the barter were the metals, precious metals (poles, coins), bill, and paper money. Modern traders instead generally negotiate through a medium of exchange, such as money. As a result, buying can be separated from selling, or earning. The invention of money (and later credit, paper money and non-physical money) greatly simplified and promoted trade. Trade between two traders is called bilateral trade, while trade between more than two traders is called multilateral trade and trade between nations is called foreign trade/ international trade or external trade.

Trade affects growth in three primary ways. (1)Trade encourages the flow of resources from the low-productive sectors to high- productive sectors which in turn leads to an overall increase in output. Export growth may affect total productivity growth through dynamic spillover effects on the rest of the economy *(Feder*, 1983). The possible sources of

***Hafiz Wasim Akram** is a Research Scholar, Department of Commerce & Business Studies, Jamia Millia Islamia University, New Delhi. Email: wasim_akram87@rediffmail.com

****Md Daoud Ciddikie** is a Research Scholar, Department of Commerce & Business Studies, Jamia Millia Islamia University, New Delhi. Email: ciddikiedaoud@gmail.com

*****Prof. (Dr) M Altaf Khan** is the Head Department of Commerce & Business Studies, Jamia Millia Islamia University, New Delhi. Email: draltafjmi@gmail.com

this positive dynamic spillover include more efficient management styles, better forms of organisation, labour training and knowledge about technology and international markets (Chuang,1998). (2) An increase in export sales leads to an overall expansion in production and a fall in the unemployment rate. As production increases because of economies of scale (increases in the scale of operations), firms become more efficient *(Helpman and Krugman*, 1985). (3) International trade also enables for the purchase of capital goods from foreign countries and exposes an economy to the technological advances of the developed countries. Recent theoretical work suggests that capital goods imported from technologically advanced countries may increase productivity and thereby growth, since knowledge and technology are embodied in equipment and machinery and therefore transferred through international trade (*Chuang,* 1998).

According to the theory of comparative cost, each country should concentrate on the production of those goods for which it is best suited, taking into account its natural resources, climate, labour supply, technical know-how and the level of development. Each country specializes in the production of those goods which it can produce at the lowest cost as compared to other countries which leads to international specialization and division of labour. This reduces the cost of production all over the world and improves the standard of living of the people in various countries.

International trade improves the welfare of a country by allowing higher levels of consumption and investment. In a country like India where labour is a surplus factor, international trade helps in generating higher employment and higher wage rates with positive implications for income distribution and poverty, thereby raising the level of social welfare. It is universally agreed that foreign trade plays an important role in the development of an economy.

Over the past 25 years, world trade has grown significantly due to deepening economic integration. Intra-regional trade expansion is the most direct form of regional economic cooperation. Larger markets and complete utilisation of production capabilities, transfer of technologies, comparative advantage, economies of scale due to expansion in the market, better utilisation of entrepreneurial capabilities, manpower and natural resources with which the partner nations are endowed in varying degrees are some of the benefits of intra-regional trade expansion. To achieve these benefits of economic integration within South Asia, Bangladesh proposed a regional cooperative body of South Asian leaders in 1980, which then led to the establishment of the South Asian Association for Regional Cooperation (SAARC) in the year 1985, the adoption of the SAARC Preferential Trading Arrangement (SAPTA) eight years after in 1993, and the agreement on the South Asian Free Trade Area (SAFTA) in 2004.

Under the SAFTA agreement which was reached on 6 January 2004 at the 12th SAARC Summit in Islamabad, Pakistan which created a framework for the establishment of a free trade area (FTA) covering 1.4 billion people at that time. This agreement came into force on 1 January 2006. SAFTA requires the developing countries in South Asia (India, Pakistan and Sri Lanka) to bring their duties down to 20 percent in the first phase of the two year period ending in 2007. Later on the 20 percent duty was to be reduced to zero in a series of annual cuts in the final five year phase ending 2012,. The least developed nations in South Asia (Nepal, Bhutan, Bangladesh, Afghanistan and Maldives) have an additional three years to reduce tariffs to zero.

SAARC had a slow start, but gained momentum with the launch of SAPTA in the mid-1990s. Since the implementation of SAFTA at the beginning of the new millennium, it has begun to perform robustly (*Mohanty and Chaturvedi*,2006). On the contrary, *Madhusoodanan* (2010) states that South Asia combines a low level of regional integration and the presence of relatively high trade barriers. Though the proportion of trade originating in the region has increased in the last decade, it still lags behind many similar regional arrangements. However SAFTA is an initial step in the evolution of the SAARC as a regional trade bloc and an economic union. There is much speculation about its favourable effect on intraregional trade. This study highlights India's trade and trade relationship with SAFTA at large and with each members of the trade bloc in particular. The study also highlights the macroeconomic overview of the region citing several indicators. Literature gives a brief discussion on SAFTA and then India's trade with SAFTA countries.

2. REVIEW OF LITERATURE

Although enormous literature is available on intra-SAFTA trade and India's trade with SAFTA region, we are giving some of the findings of researchers.

Madhusoodanan (2010) states that South Asia has a low level of regional integration and the presence of relatively high trade barriers. The share of trade originating in the region has increased in the last decade but still lags behind in many similar regional arrangements.

According to a study conducted by *Nag and Nandi*(2006), the presence of Regional Trading Arrangements in today's

multilateral trade has become a common phenomenon. India in its efforts to embrace this phenomenon became an important constituent of SAARC. *Mehta and Kumar* (2004) argued that signing of SAFTA agreement was a landmark in the evolution of SAARC since its formation in 1985. SAARC would benefit from regionalism if its cooperation would extend beyond formal trade. *Dhungel* (2004) notes that actual progress and achievement in implementation of SAARC agendas were considered very insignificant. *Jhamb* (2006) has supported Dhungel's view and argued that it was primarily due to the tenuous political relations between India and Pakistan and a general environment of mistrust among member countries. However, *Rahman et al*. (2006) by using a gravity model, showed that elimination of trade barriers and structural rigidities originating from adverse political relationship could lead to substantial increase in intra-SAARC trade.

Pitigala (2005) has found that the trade structures of SAARC countries might not facilitate a rapid increase in intra-regional trade due to weak trading relations among SAARC countries. This view was supported by by *Baysan et al*. (2006). They argue that the economic cases for SAFTA are relatively weak. They state that from an economic standpoint, neither a qualitative argument nor a quantitative assessment was available to give one reason in order to feel enthusiastic about the arrangement. They further state that compared to the rest of the world, this region is tiny both in terms of economic size as measured by GDP, per capita income and the share in the world total trade. Therefore, trade preferences to the regional partners would likely be leading to a consequence of trade diversion rather than trade creation. *Das* (2007) argues that evidence of trade complementarity in South Asia is mixed, so preferential trading initiative was based on a weak proposition. *Pierola* (2007) finds that the arrangements of preferential trading in South Asia including SAFTA fell short of their potential because of special arrangements for selected products, product exemptions, and restrictive rules for point of origin.

Rahman (2008) examines the macroeconomic structure of SAFTA countries, namely Bangladesh, India, Nepal, Pakistan and Sri Lanka and possibility of trade expansion among these countries by examining the macroeconomic and regional trade link models based on time series data of 28 years. He finds that there are inter-country differences in production and consumption, investment behaviour, tax and non-tax structures in the SAARC countries. So there is huge scope for trade expansion among the SAFTA countries. He further finds that unlike EU, EFTA, NAFTA, MERCOSUR, ASEAN and APEC, SAFTA has never been an important player in the international market because of its policy of inward orientation. The share of the SAFTA member countries (SMCs) in world trade has been hovering at around 1%, which is much less compared to other regional trading blocs. Even the share of trade is remarkably lower than the share of SAARC in world output.

Kaur and Nanda, (2010) has calculated India's export potential to other SAARC nations (Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka) with the help of gravity model of exports using panel data methodology (such as fixed effect model, pooled model, and random effect model) by taking the time period 1981–2005. The study indicates that among SAARC countries, export potential of India exists for Bhutan, Pakistan, Maldives, and Nepal. India is the only SAARC member that shares land border with four members and sea border with two. No other SAARC country has a common border with each other. India is a source of potential investment and technology and a major market for products from all other SAARC members countries. Therefore, it is essentially in India's interest to put her weight behind SAARC.

Shrestha(2003) in this study has made an attempt to analyse some of the key issues related with Indo-Nepal trade relation and scope for improving trade relationship between these countries in the future. He states that Indo-Nepal trade is very important for the economic development of both these countries. Trade relation with India is rather crucial to Nepal particularly due to her geographic characteristics. Trade statistics presented by *Shrestha* shows an increasing trend of trade in both the exports and imports. However, it is worth noting that the trade balance is not in favour of Nepal. Nepal's trade with India is likely to play further a key role in trade and industrial fronts in the future as well. Trade and transit treaties held between the two countries are continuously reflecting the fact. *Perera,* (2009) states the next stage of the SAFTA is transforming the SAFTA very fast into the South Asian Customs Union (SACU), which is already a component of the agreement.

Hossain 2005 in his research has analysed the impact of SAFTA on Bangladesh in terms of export generation within member countries. He has used standard gravity model to analyse Bangladesh's export potential using cross-section data. From the result, it is observed that Bangladesh has huge export potential to SAFTA in general and India in particular. If SAFTA Charter is properly implemented, Bangladesh's exports within this region would be much higher than the estimated potential export. He finds that Bangladesh has exceeded its potential level in imports. Therefore, the expected increase in import by Bangladesh from SAFTA member countries might not be as large as the expected increase in export.

3. METHODOLOGY

The SAFTA is an economic and political organisation of eight countries in Southern Asia namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. The paper presents the brief profile and macro-economic overview of SAFTA countries. The study examines the emergence of SAFTA as a trade bloc and analyses India's trade relationship with SAFTA countries. The study also examines the trends in India's trade with them in the form of table. The data consists of India's trade with seven of the SAFTA members. The time period under study spans from 2006 to 2012. Data on India's exports and imports have been compiled from the Website of Department of Commerce GOI, GGCI&S. India's balance of trade with SAFTA countries has also been analysed.

4. SAFTA: MACROECONOMIC OVERVIEW

The SAFTA region constitute about 23 percent of the population of the world, 15 percent of the total arable land and only 6.0 percent of the *Purchasing Power Parity* (PPP)based (GDP) global domestic product. The region accounts for around 2.0 percent of the world's goods trade, and around 3.0 percent of the foreign direct investment. The SAFTA region is very much diverse as far as the country size, economic and social development, geography and political system are concerned. The region comprises eight countries and three of them viz., Afghanistan, Nepal, and Bhutan are mountainous. Sri Lanka is an island and the Maldives is an archipelago.

The position of the region has changed from being the slowest during 1960s and the 1970s to one of the fastest growing regions in the world since the 1980s. As far as the GDP growth rate is concerned, South Asia has performed robust growth over the years among the low income countries. According to the World Bank database, during the 1960s, GDP growth in the region was placed at 4.2 percent as compared to 5.4 % at the global level. Except during the 1960s and 1970s, the GDP growth in South Asia was higher than those of the world output growth till 2008. The growth in South Asia remained sustained at an average of 5.4 % during 1980-1999 followed by higher average growth of 6.8 percent during 2000-08. The average growth rate of SAFTA countries was 6.73 % in 2012.

The South Asian region also reflects growing savings. The gross capital formation of South Asian economies doubled from 15.1 % during the 1960s to 32 % during 2008 as against a decline from 23.1 % to 21.5 % during the same period at the world level. The gross capital formation of SAFTA region in 2012 was 32.4% as against the global figure of 21 % in the year 2012. It is a matter of concern that some economies of the region, *viz*., Afghanistan, Nepal, Bhutan and Bangladesh still depend on foreign savings/aid for financing their resource gaps.

So far as the fiscal position of the SAFTA region is concerned, at present all countries have cash deficit. Some of the economies of the region are highly sensitive to external and natural shocks. The cash deficit of India was 3.7 % in 2011. The cash deficit for Maldives was at 16.3 % in 2010. The cash position of Bhutan is also quite sensitive to project-specific revenues and expenditure of the government. The cash deficit was at 3.2 % of GDP in 2010. In Pakistan, in spite of overall improved revenue position, a sharp increase in current expenditures kept the fiscal deficit at 7.8 % of GDP in 2012. Continued modernisation of revenue administration broadened the tax base in Sri Lanka, which along with lower than expected expenditure, contributed to some reduction of the fiscal deficit to 6.4 % of GDP in 2012 as compared with 6.8 % in 2008, 8.9 % in 2010 and 7.2 % in 2011, respectively. The case of Bangladesh is quite different wherein revenue collection slipped but the spending was contained by a reduction in outlays for the annual development program, which brought it a cash surplus of 0.9 % of GDP in 2012. The cash deficit of Bangladesh in the year 2010 and 2011 were at 1.7, and 0.9 % respectively. The cash deficit of Nepal remained steady between 1-2% of GDP. The cash deficit of Nepal for the previous three years 2010, 2011, and 2012 was at 1.4%, 1.0%, and 1.7 %, respectively. The fiscal position in India was undergoing consolidation till the outbreak of the recent financial crisis. The gross fiscal deficit (GFD) and revenue deficit (RD) of Central Government for 2008-09 were placed higher at 6.0 % and 4.5 % of GDP. As per the report published in "*The Indian Express*" dated 31st May 2013, India's fiscal deficit for 2012-13 has narrowed to 4.9% of GDP.

All SAFTA countries, except Nepal, Bangladesh, and Afghanistan have largely suffered current account deficit (CAD). CAD as a ratio to GDP is highest in Maldives at 27.16 % in 2012 despite a net surplus in services trade, most of which comes from tourism. Although, tourism earnings recovered to exceed the pre-tsunami level, huge services payments and the expansion in imports meant that net services covered only about 41 % of the trade deficit. The CAD in Maldives had reached an alarming level of 51.4 % of GDP in 2008 but it had improved a lot since then. In Afghanistan, the current account surplus was at 3.93 % of GDP in 2012, whereas the current account surplus in Bangladesh was at 0.67 % for the above period. The current account balance was highest for Nepal at 4.79 % of GDP in 2012 according to UN Report, 2012. Nepal had this surplus on account of narrowing trade deficit and higher remittance inflows. The trend

of strong remittance growth in Sri Lanka since 2004 reversed in 2008 due to global financial crisis. In 2008, the CAD as a ratio to GDP reached an alarming level to 9.4 % of GDP. The CAD has since then improved and stood at 6.59 % in 2012. In India and Pakistan, the current account deficit is under pressure because of higher oil import bill, deteriorating income and services accounts, and inflationary pressure despite moderate growth in exports and continued strong receipts of workers' remittances. During 2012, CAD as a ratio to GDP stood at 4.79 % in India and 2.07 % in Pakistan.

5. SAFTA: GENERAL OVERVIEW

The SAFTA agreement came into force on 1 January 2006 and is operational following the ratification of the agreement by the member countries. The member countries have agreed to promote and enhance mutual trade and economic cooperation among Contracting States by the following objectives. The objectives include eliminating barriers to trade & commerce, facilitating the cross-border movement of goods between the territories of the contracting sates; promoting conditions of fair competition in the free trade area, ensuring benefits in equitable manner to all contracting states, creating effective mechanism for the implementation and application of this agreement, joint administration and the resolution of disputes; establishing a framework for further regional cooperation to expand and enhance the mutual benefits of this agreement.

5.1 PRINCIPLES OF SAFTA

SAFTA is governed in accordance with the following principles:

a) **Principles of Governance:** SAFTA is governed by the provisions of this Agreement and also by the rules & regulations, understandings, decisions, and protocols to be agreed upon within its framework by the Contracting States;

b) **Principles of Obligation:** The Contracting nations acknowledge their existing rights and obligations with respect to each other under Marrakesh Agreement Establishing the World Trade Organization and other Treaties/ Agreements to which such Contracting States are signatories;

c) **Principles of Reciprocity and Mutuality:** SAFTA is based and applied on the principles of overall reciprocity and mutuality of advantages in such a way as to benefit equitably all Contracting States thereby taking into account levels of economic and industrial development of the member countries,

d) **Principles of Removal of Trade Barriers:** SAFTA involves the free movement of goods between the member countries through, inter alia, the elimination of tariffs, and non-tariff barriers , and any other equivalent measures; and

e) **Principle of Facilitation and Harmonisation:** SAFTA entails adoption of trade facilitation and other measures, and the progressive harmonization of legislations by the Contracting States in the relevant areas.

5.2 INSTRUMENTS FOR ADMINISTRATION OF THE PROTOCOL

Following are the instrument involved in SAFTA:-

a) Trade Liberalisation Programme

b) Rules of Origin

c) Institutional Arrangements

d) Consultations and Dispute Settlement Procedures

e) Safeguard Measures

f) Any other instrument that may be agreed upon

6. IMPORTANCE OF TRADE RELATIONSHIP WITH SAFTA COUNTRIES

Due to the growing political turmoil in Europe, Middle East, protectionist tendencies in the international market and the increasing competition among suppliers, chiefly in the developing world, the need to evolve feasible strategies for regional economic co-operation in South Asia is more and more apparent. This is evidenced by the recent tempo of activities in this regard in the South Asian region. Increased regional economic co-operation would help reduce the economic dependence of the South Asian countries on the developed countries in the future. Given the possibility that trade with the rest of the world does not offer very happy prospects in the future, intra regional trade could

facilitate growth and development of the South Asian countries on the basis of the regional self-reliance. Such regional economic cooperation is considered feasible because intra regional, historical, cultural, geographical and developmental commonalities are much stronger than intra regional differences in political and economic structures and perspectives. Besides, the sub continental economy of the South Asian region offers potentially vast and undeveloped markets to be tapped, and it is blessed with huge endowments of material and human resources.

7. INDIA'S TRADE AND TRADE RELATIONSHIP WITH SAFTA

India's trade with the SAFTA members has not been very impressive, both in terms of volume and as a percentage of its global trade. India's trade with SAFTA countries is approximately 2.6 percent of her total trade, with India's exports to SAARC countries have been below 5 percent of its total exports since 2008-2009 except 2012-13 which is 5.03%. The export share of India in the SAARC region has been 4.6% from 2008-2009 to 2010-2011, it further declined to 4.34% in 2011-12 but rose to 5.03% in 2012-13. It is worth noting that the growth rate of India's export in SAARC region had been in the negative since 2008-2009.India's imports from the SAARC countries have been only 0.8414, 0.5986, 0.5747, 0.5878, 0.516 &0.546 in percentage point for the years 2007-08, 08-09, 09-10, 10-11, 11-12 & 12-13, respectively. Even the trade is much below the true potential. Given the size of the Indian economy and its geographical positioning at the centre of the region, the success of trade initiatives taken in the SAARC region greatly depends on India and therefore, India needs to play a greater role in ensuring that the goals of SAFTA are achieved. India's trade with the SAARC countries is shown in Tables showing bilateral trade as evident from tables, while India has a favourable balance of trade with all countries in the South Asian region; it has a huge trade surplus with Bangladesh, Pakistan, Sri Lanka, and Nepal. However, it is important to note here that the official accounts of South Asia's international trade statistics are flawed by the high incidence of informal trade between India and its neighbours. The data merely captures the formal trade which takes place among the neighbouring countries.

TABLE 1: India's Trade with SAFTA

(Values in US$ Million)

	2007-08		**2008-09**		**2009-10**	
	Volume	**Growth (%)**	**Volume**	**Growth (%)**	**Volume**	**Growth (%)**
India's export to SAARC	9,637.76	48.87	8,567.12	-11.11	8,567.12	-2.06
India's total export	163,132.18	29.05	185,295.36	13.59	178,751.43	-3.53
% share	5.9079		4.6235		4.6941	
India's import from SAARC	2,117.35	40.46	1,817.89	-14.14	1,657.34	-8.83
India's total imports	251,654.01	35.49	303,696.31	20.68	288,372.88	-5.05
% share	0.8414		0.5986		0.5747	
	2010-11		**2011-12**		**2012-13**	
	Volume	**Growth (%)**	**Volume**	**Growth (%)**	**Volume**	**Growth (%)**
India's export to SAARC	11,659.14	38.95	13296.47	14.04	15,110.70	13.64
India's total export	251,136.19	40.49	305,963.92	21.83	300400.68	-1.82
% share	4.6426		4.345		5.03	
India's import from SAARC	2,173.37	31.14	2524.74	16.17	2679.95	1.06
India's total imports	369,769.13	28.23	489319.49	32.33	490,736.65	0.29
% share	0.5878		0.516		0.5461	

***Source*:** Government of India, Ministry of Commerce.

7.1 INDIA'S TRADE WITH SRI LANKA

Sri Lanka has traditionally been an important export market for India. India-Sri Lanka Free Trade Agreement (ISFTA) was signed on 28th December, 1998. This agreement is in operation since 1st March, 2000. Under this Agreement, both nations agreed to phase out trade tariffs from each other within a fixed time frame except for those items in the Negative List of each other. A Joint Study Group (JSG) was set up in April, 2003 in order to widen the ambit of ISLFTA to go beyond Trade in Goods to include Services and to facilitate greater investment flows between the two countries.

They have agreed to take forward the process of signing a comprehensive agreement for economic cooperation. India's trade with Sri Lanka has shown marked increase from US$ 2728.63 million in 2006-07 to US$ 4609.68 million in 2012-13.

The trend in India's trade with Sri Lanka is given below:

TABLE 2: India's Bilateral Trade with Sri Lanka

(Value in US $ million)

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	2258.30	470.33	2728.63	+1787.97
2007-08	2830.43	634.96	3465.39	+2195.47
2008-09	2425.92	356.57	2782.49	+2069.35
2009-10	2188.01	392.19	2580.20	+1795.82
2010-11	3510.05	501.73	4011.78	+3008.33
2011-12	4378.79	637.43	5016.23	+3741.36
2012-13	3983.87	625.81	4609.68	+3358.06

***Source*:** Government of India, Ministry of Commerce.

7.2 INDIA'S TRADE WITH PAKISTAN

India and Pakistan have no formal trade agreement. India granted the Most Favoured Nation (MFN) status to Pakistan way back in 1995-96 but Pakistan is yet to reciprocate. Although recently, a decision was taken in this regard in the Cabinet meeting of Pakistan which was communicated through the Press Release of Pakistan Government on 2nd November 2011, stating that "the Pakistan Cabinet gave Ministry of Commerce the mandate to take the process of normalization of trade forward, which would culminate in the observance of Most Favoured Nation (MFN). It is lamenting that the statement was later denied. Bilateral trade and commerce talks were held between Commerce Secretaries of India and Pakistan on 27-28 April 2011, in Islamabad. Both nations inter-alia, agreed for the improvement in trade infrastructure and expansion of trade through Attari-Wagha land route. They agreed to set up a Working Group to address and resolve clearly identified sector-specific barriers to trade. Both India and Pakistan agreed to undertake new initiatives to enable trade in electricity and petroleum products. They expressed agreement that cooperation in Information Technology sector would be encouraged through the private sector. Both of them agreed to facilitate grant of Business Visas to encourage expansion of trade.

During the recent meeting of Commerce Ministers' of India and Pakistan held in New Delhi on 28th September 2011, they agreed that their countries would cooperate for a high ambition of preferential trade relations under the framework of South Asian Free Trade Agreement (SAFTA). They noted with satisfaction the joint and collaborative efforts already being made by India and Pakistan to liberalize trade in goods and services under SAFTA. In the meeting it was agreed that all mutual obligations contracted under SAFTA would be implemented with full sincerity. India's trade with Pakistan has increased substantially from US$1673.71 million in 2006-07 to US$ 2606.66 million in 2012-13.

TABLE 3: India's Bilateral Trade with Pakistan

(Value in US $ million)

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	1350.09	323.62	1673.71	+1026.47
2007-08	1950.53	287.97	2238.50	+1662.56
2008-09	1439.88	370.17	1810.05	+1069.71
2009-10	1573.32	275.94	1849.26	+1297.38
2010-11	2039.53	332.51	2372.05	+1707.02
2011-12	1541.56	397.66	1939.21	+1143.90
2012-13	2064.79	541.87	2606.66	+1522.92

***Source*:** Government of India, Ministry of Commerce.

7.3 INDIA'S TRADE WITH AFGHANISTAN

India & Afghanistan signed the Preferential Trade Agreement on 6th of March 2003 in New Delhi. This agreement will remain in force till either party gives to the other a notice for its termination. India, as per the Agreement, has granted preferential tariff for 38 products from Afghanistan such as dry fruits, fresh fruits, raisins, and spices whereas Afghanistan granted preferential tariff to 8 items from India such as medicines, refined sugar, tea, cement clinkers and white cement. Afghanistan became the eighth member of SAARC during the Fourteenth SAARC Summit held in New Delhi on 3-4 April 2007. The provisions of Trade Liberalization Programme (TLP) are applicable to Afghanistan with effect from 7th August, 2011. MOU between the Government of Afghanistan and Government of India on the co-operation in the field of Cement sector was signed on 12th January 2012 at Hyderabad. India's trade with Afghanistan has increased substantially from US$ 216.48 million in 2006-07 to US$ 632.18 million in 2012-13. The trend in trade between India and Afghanistan is given in Table below:

TABLE 4: India's Bilateral Trade with Afghanistan

(Value in US $ million)

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	182.11	34.37	216.48	+147.74
2007-08	249.21	109.97	359.18	+139.24
2008-09	394.23	126.24	520.47	+267.99
2009-10	463.55	125.19	588.74	+338.36
2010-11	422.41	146.03	568.44	+276.38
2011-12	510.90	132.50	643.41	+378.40
2012-13	472.63	159.55	632.18	+313.7

***Source*:** Government of India, Ministry of Commerce.

7.4 INDIA'S TRADE WITH BANGLADESH

The Bilateral Trade Agreement between India and Bangladesh has been renewed from time to time for expansion of trade and commerce. With Bangladesh, relations have improved significantly over the last few years. The dialogue has yielded benefits for both countries in favour of trade & commerce, connectivity, easier transit, development, enhancement

of mutual security cooperation against insurgency and terrorism. There is enhanced mutual trust and confidence that is oxygenating relationship between India and Bangladesh. Under SAFTA Agreement, India remained committed to reduce its tariffs to 20% for LDCs in two years after the commencement of SAFTA. India had removed all duties for LDCs in December 2007, prior to the time stipulated under the tariff liberalisation programme for NLDCs.

Bangladesh was the biggest beneficiary country of the reduction in India's sensitive list from 744 items in 2006 to the current list of just 25 items. To benefit Bangladesh's textile exports, India introduced in 2008 the provision of allowing 164 textile items from Bangladesh to enter its market at zero duty up to a limit of 8 million pieces per year. This step was taken ahead of the concessions that India offered to all LDCs in October 2008. The limit of 8 million pieces was increased further to 10 million pieces in 2011. Bangladesh was further benefited when Prime Minister Manmohan Singh made a visit to Dhaka. Sixty-one items figuring on India's sensitive list for LDCs were allowed duty free access without any quota restrictions. Bangladesh benefited too much because 46 items out of the 61 hailed from the textiles category (*Taneja and Kaushal,* 2011). In other words India removed all 46 items which were of interest to Bangladesh. Further more in (November) 2011, India reduced the sensitive list for LDC countries to just 25 items.

Both sides are working on several projects to improve trade infrastructure and connectivity. Several agreement between India and Bangladesh are MoU on Renewable Energy Cooperation, MoU on Conservation of the Sundarbans, MoU (on Cooperation) in the field of Fisheries, MoU on Mutual Broadcast of Television Programmes, MoU between Jawaharlal Nehru University and Dhaka University, MoU on Cooperation in Academic Related Matters between National Institute of Fashion Technology (NIFT), India and BGMEA Institute of Fashion and Technology (BIFT), Bangladesh.

India's trade with Bangladesh has increased substantially from US$1857 million in 2006-07 to US$ 5784 million in 2012-13. The trend in trade between India and Bangladesh is given in Table below:

TABLE 5: India's Bilateral Trade with Bangladesh

Value in US $ million

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	1629.57	228.00	1857.57	+1401.57
2007-08	2923.72	257.02	3180.74	+2666.7
2008-09	2497.87	313.11	2810.98	+2184.76
2009-10	2433.77	254.66	2688.43	+2179.11
2010-11	3242.90	446.75	3689.66	+2796.15
2011-12	3789.20	585.73	4374.93	+3203.47
2012-13	5144.99	639.33	5784.31	+4505.66

***Source*:** Government of India, Ministry of Commerce.

7.5 INDIA'S TRADE WITH NEPAL

Indo-Nepal trade relations is governed by the bilateral treaties of Trade and Transit & Agreement for Co-operation to Control Unauthorised Trade signed in the year1971, 1978, 1996, 2002 and 2009, respectively. The Indo-Nepal trade treaty which took place in 1996 was a landmark breakthrough in Indo-Nepal bilateral trade. Under this agreement India provided duty-free access to all products which were manufactured in Nepal on the basis of a certificate of origin (COI) issued by the Nepali authorities with no minimum requirement of domestic value addition. Under the agreement no value added criteria were needed for products manufactured in Nepal to qualify for tariff concessions on entry in the Indian market. As a result of this Nepal's trade with India thrived because it was benefited by the (1) low duty rate that Nepal had imposed on raw material import compared to the prevailing tariff rate on raw materials in India and (2) tariff free offer on all products which were imported from Nepal by India under the provision of Indo-Nepal Free Trade Agreement. (*Taneja et. al*, 2011).

Another important agreement are the Treaty of Trade and the Agreement of Cooperation which were signed between the two countries on 27th October, 2009 at (Kathmandu) Nepal. The Treaty aims at improving bilateral trade between the two countries by increasing the mutually agreed points of trade. An Inter-Governmental Committee (IGC) meeting on matters of Trade, Transit and Cooperation to control unauthorised and illegal trade was held in December 2011. Both sides had a detailed discussion on various bilateral issues. Nepalese request for waiver of Additional Duty of Customs (ADC) on all export items to India was also considered. Provisions of Treaty of Trade signed in October 2009 for replacement of Duty Refund Procedure (DRP) has been implemented vide Notifications 24-29/2011-Central Excise (N.T.) dated 5.12.2011. Double Taxation Avoidance Agreement (DTAA) with Nepal was signed on 27th November 2011 to help exporters and investors of both the countries in improving mutual business engagements. India's trade with Nepal has increased substantially from US$ 1233.42 million in 2006-07 to US$ 3634.94 million in 2012-13.

The trend in trade between India and Nepal is given in Table 6:

TABLE 6: India's Bilateral Trade with Nepal

(Value in US $ million)

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	927.40	306.02	1233.42	+621.38
2007-08	1507.42	628.56	2135.98	+878.86
2008-09	1570.15	496.04	2066.19	+1074.11
2009-10	1533.31	452.61	1985.92	+1080.70
2010-11	2186.06	513.40	2681.47	+1654.66
2011-12	2721.57	549.97	3271.54	+2171.59
2012-13	3088.84	543.10	3631.94	+2545.73

***Source*:** Government of India, Ministry of Commerce.

7.6 INDIA'S TRADE WITH MALDIVES

India established diplomatic relations with the Maldives as far back as 1956 when it gained independence and the two settled their maritime border in 1976.Although the bilateral relations in the beginning were limited, bilateral relations took their first major step forward when India intervened to crush a coup against the Maldivian government in 1988. Since then, India has given considerable economic assistance and training to the Maldives in diverse fields such as health, disaster relief, telecommunications, civil society development, and infrastructure development. The Bilateral Trade Agreement was signed between India and Maldives on 31st March, 1981. It will remain in force until it is modified or terminated by either country. Even after three decades of bilateral agreement, bilateral trade is not commensurate with its true potential.

However, since the early 2005, Indian exports to the Maldives have been growing at a fast rate. In the Indian fiscal year 206-07, bilateral trade was valued at $72 million. As of 2012-13, the total trade volume between the two countries stood at $129 million. Although Indian exports have increased substantially, Maldivian exports to India have not, thereby leaving a bilateral deficit of trade of almost US$ 116 million. India is the Maldives' third largest trading partner. Maldives exports primarily scrap metals to India, while India exports agricultural and poultry produce, pharmaceuticals, textiles, and a variety of engineering and industrial products to the Maldives. The trend in trade between India and Maldives is given in Table below:

TABLE 7: India's Bilateral Trade with Maldives

(Value in US $ million)

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	68.68	3.05	71.73	+65.63
2007-08	89.72	4.15	93.87	+85.57
2008-09	127.91	3.97	131.88	+123.94
2009-10	79.86	3.63	83.49	+76.23
2010-11	100.14	31.38	131.52	+68.76
2011-12	124.60	18.89	143.49	+105.71
2012-13	122.36	6.29	128.65	+116.07

***Source*:** Government of India, Ministry of Commerce.

7.7 INDIA'A TRADE WITH BHUTAN

The current India - Bhutan Friendship Treaty was held in 2007 which provides for strengthening of bilateral trade relations between both the nations on matters of trade and commerce. India is the leading trade partner of Bhutan. A free trade exists between India and Bhutan. The major items of exports from Bhutan to India are electricity, alcoholic beverages, chemicals, cement, timber and wood products, base metals and articles, minerals, vegetable fat and oils, cardamom, fruit products, potatoes, oranges and apples, raw silk, plastic and rubber products etc.Major items of exports from India to Bhutan are petroleum products, mineral products, vegetable, spices, processed food and animal products, base metals and articles, machinery, chemicals, automobiles & spares, wood, plastic and rubber etc. Under the Agreement on Trade and Commerce, there is a provision for duty free transit of Bhutanese merchandise for trade with third countries. India's trade with Bhutan has increased substantially from US$199.71million in 2006-07 to US$ 397.22 million in 2012-13.

The trade trend between India and Bhutan is given in Table below:

TABLE 8: India's Bilateral Trade with Bhutan

(Value in US $ million)

Year	Exports	Imports	Total Trade	Balance of Trade
2006-07	57.66	142.05	199.71	-84.39
2007-08	86.74	194.72	281.64	-107.98
2008-09	111.15	151.79	262.94	-39.93
2009-10	118.86	153.11	271.97	-32.93
2010-11	176.03	201.57	377.60	-25.54
2011-12	229.86	222.55	432.41	+27.30
2012-13	233.22	164	397.22	+69.22

***Source*:** Government of India, Ministry of Commerce.

HIGHLIGHTS OF TRADE WITH SAFTA COUNTRIES

- During 2012-13, Bangladesh was the largest trading partner of India in SAARC region.
- During 2012-13, India has recorded a negative growth rate of exports with Sri Lanka, Afghanistan and Maldives in SAARC region.
- During 2012-13, the lowest decline in growth of exports was recorded for Maldives.

- Except for Bhutan, India runs a trade surplus with all other trading partners.

CONCLUSION & RECOMMENDATIONS

Though, the pace of trade has picked up, there is need to consider dimension of informal trade in the trade exchanges. The problem of informal trade taking place in the region is estimated to be more than that of official trade. Relation between nations should strengthen. Improvement of Indo–Pak ties is crucial. It is not that only India and Pakistan have problems. India and Bangladesh have some issues to settle. Same is the case with Nepal and Bhutan. Pakistan and Afghanistan also do not lag behind on this score. There is still no South Asian ideological bond that unites the people of eight countries.

Given the size of the Indian economy and its geographical positioning at the centre of the region, the success of trade initiatives in the SAFTA region is greatly dependent on India. To make SAFTA a meaningful coalition and a strong economic block, strong progress towards its economic integration is very important. SAFTA countries need to take advantage of their close proximity to increase their trade and investment flows. The complementarities on different dimensions need to be explored so that the entire region progresses and the benefits are balanced. India, being the largest economy in SAARC, its role is widely regarded as crucial in determining the effectiveness of SAFTA; therefore, it will have to play a proactive and leading role in drawing the future agenda or the road map of SAFTA.

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Ecology in Asia

RICE, SMALLHOLDER FARMS, AND CLIMATE CHANGE IN BANGLADESH: THALA OF POLICY OPTIONS

M. Mizanur Rahman* ,Bradley Klees**
Tasfi Sal-sabil, Niaz Ahmed Khan*******

ABSTRACT

Smallholder farmers in Bangladesh face some of the most unpredictable agricultural conditions on the planet. Annual flooding, cyclones and other natural hazards cause huge fluctuation in rice yields, the country's most important crop, are subject to huge fluctuations. Climate change is already happening in Bangladesh and the associated adversities are expected to increase the unpredictability of smallholder farming. This is pushing Bangladesh's smallholder farmers away from cereal cultivation or out of agriculture altogether. Eighty percent of Bangladesh's food is produced by smallholders, and this shift threatens the food security of the country. Increases in net production of rice as well as resilience of rice crops to the effects of climate change have thus become urgent and pivotal issues and challenging for the continued progress towards Bangladesh's goal of food self-sufficiency.

In the above backdrop, this article aims, firstly, to proffer a critical overview of rice production, small holder farms and agriculture in Bangladesh in the context of climate change; and secondly, to furnish selected policy suggestions towards greater climatic and social resilience of agriculture and rice production. The study makes several suggestions to policy makers for improving and expanding agricultural extension services, including (a) the provision of salt-resistant rice varieties to coastal areas, and (b) improvement of extension services with a focus on smallholder and women farmers - which may be relevant not only for Bangladesh, but also for similar territories in South Asia.

Keywords: Agriculture, climate change, farmers, rice, smallholders.

SETTING THE SCENE

Global population increase and rising incomes in hitherto poor countries, as some recent studies unequivocally suggest, will lead to increased food demand in the coming years. According to the FAO (2012), for example, the global demand for food is expected to increase by 60 percent by 2050. Given the challenges of climate change, natural resource constraints and competing demands, considerable challenges face agriculture and food systems worldwide (*World Bank*, 2009). These obstacles are especially relevant and pertinent to Bangladesh, which is one of the most densely populated nations in the world and is located in the low-lying, natural hazard-prone Ganges river delta.

*** M. Mizanur Rahman** is a Post Graduate Fellow at the Department of Development Management at Asian Institute of Management, The Philippines [Corresponding author : mithunmds07@gmail.com]

**** Bradley Klees** is with the Quest University, Canada, E-mail: bradley.klees@questu.ca

***** Tasfi Sal-sabil** is a Research Officer, ICDDR-B,Dhaka, Bangladesh.

****** Niaz Ahmed Khan** is the Chairman and Professor, Department of Development Studies, University of Dhaka, Bangladesh; and former Country Representative-Bangladesh, International Union for Conservation of Nature.

Bangladesh experienced famine in 1974 after the widespread destruction of infrastructure during the civil war with Pakistan in 1971, coupled with consecutive natural disasters that led to substantial reduction in rice production. Since that experience, the primary goal of food policy in Bangladesh has been achieving self-sufficiency in rice production and stabilization in rice prices as well as ensuring food security for all the households (*Dorosh et al.,* 2004; *Dorosh et al.,* 2006).

Food production in Bangladesh has increased significantly in past decades, in part due to agricultural intensification aided by the Green Revolution technology introduced in the 1980s (*Dorosh,* 2012). The country passed a major milestone in its efforts to achieve food security at the end of the 1990s, when for the first time in its history, food grain production exceeded target requirements (based on 454 gm/person/day) (*Hossain et al.*, 2005).

In a subsistence-oriented agrarian economy such as Bangladesh, domestic food production has an important role in the pursuit for both food security and developing economy. Smallholder farming is essentially meeting the nutritional requirements of the country and ensuring food security in the coming decades (*Dorosh et al*., 2002). However, in recent years Bangladesh has experienced various natural and market phenomena that have discouraged small farmers. For example, increasing input cost for fertilizers, pesticides, price of electricity and diesel has frustrated farmers and made farming increasingly less profitable (*Hossain et al.,* 2005).

Climate change, population density, and land pressures also pose significant and increasing threats to sustaining the yields. The country faces rising sea levels in the south, more annual flooding in the central region because of stronger monsoons, drought in the northwest and inadequate water for rice production, due to a shorter monsoon season, in the east. Decreased productivity due to these obstacles will affect smallholder farmers the most, possibly forcing them to switch to more lucrative cash crops from food grains or to leave agriculture altogether (*Dorosh et al.,* 2002).

The resulting rural-urban migration in Bangladesh is leading to over-crowded cities and mounting pressure on already strained civic infrastructure. Improvements in rural livelihoods could help to stem the flow. Because smallholder farms produce the vast majority of Bangladesh's food, the decision by farmers to leave agriculture could also have further detrimental effects on the food production and thus food security of the nation, especially the production of essential rice and wheat crops.

In attempting to meet the objective of food self-sufficiency, the Government of Bangladesh (GoB) has undertaken several policy initiatives, including open market sales of food grain to limit food grain price increases, targeting food distribution to poor households, providing emergency relief after natural disasters and procuring food grains to support producer prices and incomes (*Dorosh et al.,* 2002).

The severe variability of Bangladeshi agriculture due to geographic location and climatic conditions means that food self-sufficiency is unlikely to be a consistently attainable goal, and is made even more unrealistic by the prospects of climate change. Domestic food grain production is highly vulnerable to floods, droughts and major production shortfalls and periods of inadequate food availability that come with natural hazards (*World Bank,* 2009). Bridging the rice yield gap remains a priority of agricultural policies and justifiably so. Bangladesh lacks the foreign currency to be dependent on rice imports and rice cultivation provides the livelihood for millions of Bangladeshis (*Hossain*, 2005).

The problems of climate change and retaining smallholder farming must be tackled together in order to ensure the food security of Bangladesh. Neither can be ignored and the issues are interlinked. Although increasing, rice yields in Bangladesh are erratic and inconsistent. Climate change, which is already a reality in Bangladesh, poses threats to these yields now and in the future. Smallholder farmers, who produce the vast majority of the country's rice, are reliant on sufficient rice yields for their livelihoods.

Further increases in production of rice as well as improvements in climate resilience are thus necessary, if not to increase net production then to hedge against projected yield drops in climate change scenarios. Investments in a dynamic and responsive agricultural research and extension system are essential to bridge yield gaps and potentially accelerate export promotion. While the NGO sector in Bangladesh is well developed and the quality of informal institutions is improving, formal GoB development institutions remain somewhat weak (*World Bank*, 2009). Government agencies at all levels face overlapping functions, lack of communication and coordination, low skill levels and incentives and lack of responsiveness, exacerbated by an urban bias. Therefore, the combination of government and non-governmental efforts is needed to address the myriad obstacles to national food security.

AGRICULTURE IN BANGLADESH: AN OVERVIEW

Bangladesh has made significant progress in domestic food production since its independence in 1971. Through the 70's and early 80's, Bangladesh was a severely food deficit country and heavily dependent upon food aid, but the country's rice production has tripled over the past three decades (*Hossain,* 2005).

Bangladesh is a predominately an agrarian country with over 53% of its population engaged directly in agriculture (*Sumelias et al.*, 2011). Though agriculture accounts for only 21% of the national GDP, agricultural production has an important bearing on employment generation, food security and poverty alleviation, and is thus critical for development of the rest of the economy (*World Bank*, 2009). For these reasons, growth in the agricultural sector remains a development priority.

Seventy-one million Bangladeshis are involved in agriculture, and sixty-five million of those are smallholder farmers when rice production dominates about 70% of all cropped land in Bangladesh (*Ganesh-Kumar*, 2012). Other major items in the food basket of Bangladesh are wheat, pulses, potato, vegetables and fish. Rice and wheat alone contribute to 74 percent and 57 percent of the total per capita calorie and protein intake respectively (*BBS Data*, 2011).

Bangladesh does not export any food items in significant amounts except for shrimp. The country is heavily dependent on imports of almost all food items to meet the demand from growing population. Bangladesh also receives substantial amount of wheat from outside the country, mostly in the form of food aid. Wheat imports increased consistently over time despite the rapid growth in domestic production and the reduction in food aid in recent years (*Ganesh-Kumar,* 2012).

Although trade liberalization faced substantial opposition, Bangladesh has undergone major reforms in trade policy including liberalizing private sector trade in rice and wheat during the 90's (*World Bank*,2009). As a result, domestic output prices of rice (the main agricultural product in terms of value) and wheat have been near border prices in most years since the early 1990s. Bangladesh has reaped major benefits from trade liberalization in terms of food security as private sector imports have helped stabilize markets after major production shortfalls. Keeping domestic prices of most agricultural commodities near border prices has also resulted in overall efficiency gains in the agricultural sector (*Dorosh,* 2012).

The outlook for future food security is uncertain. Agriculture in Bangladesh sits at the intersection of the greatest challenges facing the country. Ensuring food security, not to mention sufficiency, requires adaptation to climate change while dealing with the increasing scarcity of critical inputs like water, power and land and massive population growth. In 2012, the *Global Food Security Index* ranked Bangladesh 81st out of the 105 countries considered, the lowest ranking in South Asia.

Bangladeshi agriculture is also facing a rapidly shrinking land base. While the country's population is growing at the rate of 1.6 percent per year, demographic pressures and increased urbanization have caused cultivated area to decline at a rate of 1 percent per year. Because cropping intensity has approached its limit, growth will need to come from intensification of cereal production, diversification into high-value crop and non-crop activities, and value addition in the agro-processing sector, including storage, processing and marketing.

As mentioned, a massive population size compounds all of the challenges Bangladesh's agriculture faces. The country's population density is five times that of any other 'mega' country (those with more than 100 million people), presenting unique challenges for an overwhelmingly agricultural society (*Streatfield and Karar,* 2008). Though fertility is decreasing, most projections assume that the population will top 200 million by 2050. *FAO*(2012) data shows that the prevalence of undernourishment in Bangladesh was in a declining trend up to 2008 but it has started rising again this year. A similar trend is occurring in food inadequacy as well; in 2010-2012, 26.8% of country suffered from food inadequacy (*FAO,* 2012).

Despite these current challenges, Bangladesh has made substantial progress towards food security and food self-sufficiency in past decades. Between 2000 and 2007, Bangladesh's agriculture sector has averaged an annual growth of around 3 percent, on par with, if not more than, some of its South Asian neighbors (*Ganesh-Kumar,* 2012). Bangladesh has tripled its annual rice production in the space of only three decades, its infant mortality rate has declined dramatically, and its GoB- and NGO-led homestead food production programs have been effective in tackling malnutrition by providing food rich in key vitamins and minerals. Facing such a tough environmental and socio-economic context, Bangladesh's agricultural growth is commendable, but there is much ground to be covered.

RICE IN BANGLADESH

Over the last thousand years rice has been the dominant crop in Bangladesh, and it currently accounts for 77% of agricultural land use. There are about 13 million farm families growing a variety of traditional, modern, and hybrid rice varieties. Over 11.7 million hectares of land in Bangladesh is dedicated to rice production. Rice provides about 70% of direct human calorie intake, making it the most important food crop in Bangladesh in terms of both production and consumption. (*IRRI,* 2005)

The country is said to have among the world's highest per capita consumption of rice (about 170 kg annually), and its food security and economy largely depend on good harvests year after year (*Islam,* 2005). Nearly 40% of the population lives below the food consumption-based poverty line, lacking sufficient resources to afford diet of 2,122 kcal per person per day, along with other basic necessities (BBS 2011).

There are several major rice-growing ecosystems in Bangladesh. These include the upland, direct-seeded pre-monsoon '*Aus*' season crop; the irrigated dry season '*Boro*' crop; the rain-fed lowland monsoon season '*Aman'* crop; and medium deepwater rice-growing in tidal saline and tidal non-saline areas. *Aman* season rice accounts for nearly 51% of total land area, followed by *Boro* and *Aus* season rice, which account for 40% and 9%, respectively (*BBS*, 2003; *Ganesh-Kumar,* 2012).

About 60% of the country's rice area is irrigated, and farmers commonly cultivate modern varieties with associated inputs like fertilizers and pesticides for better farm management and good yield. However, non-irrigated rice is also important to many farming families, particularly those who operate in unfavorable environments (*BBS,* 2011).Despite a tripling in domestic rice production over the last three decades, Bangladesh is not yet fully self-sufficient in cereal grains. The imports of rice remain stagnant at around 0.5 million tons per year, with substantial increase in imports predictable in years following poor harvests due to floods and droughts. Bangladesh imported over 2.0 million tons of rice during 1973-75, 1988-89, and 1998-99; all these years followed years of disastrous floods or droughts (*Ahmed,* 2007).

Still, per capita rice production has increased sharply during the last 15 years, and the food grain deficit has declined (*IFPRI,* 2012). The rice harvest of 2011/12 was the largest since independence, producing 33.7 million tons. On average, Bangladesh has become nearly self-sufficient in rice: between 1998-99 and 2007-08 the country imported an average of about 850,000 MT of rice per year, or less than 5 percent of total net availability (*Ahmed,* 2007).

Bangladesh successfully reduced real prices of rice during the 1970s and 1980s through increases in supply, largely brought about by the efficient use of green revolution technology: irrigation (private tube wells), improved seeds, and fertilizer. These remain key channels for increasing availability of food, reducing its price, raising rural incomes, and enhancing food security. Since 2008, Bangladesh's domestic rice prices have generally been less than import parity but far greater than export parity to the world market. As a result of this, there have been relatively large domestic price fluctuations. Without interventions in domestic markets, this price volatility will likely continue due to fluctuations in domestic rice harvests (*Ahmed,* 2007). As discussed below, these production and price fluctuations will impact vulnerable smallholder farmers the most. And as the discussion on the climate change above has shown, these production fluctuations may become more severe in years to come.

In this environment, private trade at import parity prices still provides an external price ceiling and can dramatically reduce the volume of stocks needed for price stability (*Dorosh,* 2012). Stable prices are conducive to the retention of smallholder farmers in the rice industry. A return to the stable and low prices of the 2002–06 period is not possible in the absence of subsidized exports by India, however, without domestic rice market interventions by the Bangladesh government (*Ahmed,* 2007; *Dorosh,* 2012).

Though Bangladesh produced record food grains last season, the report of *Global Agricultural Information Network* (2012) warns that rising yields are largely a result of increasing *Boro* cultivation, which is putting substantial pressures on Bangladesh's groundwater supply. Similarly, the USDA post in Bangladesh recently decreased its estimate for the *Aman* harvest in 2012/13 because of increased flash floods in the northern part of the country, highlighting the dependence of agriculture on fluctuating meteorological and climatic conditions.

CLIMATE CHANGE AND ITS IMPACT ON FOOD PRODUCTION

Climate change is no longer a theoretical concept. There is a global consensus among scientists, academics, professionals and strategists that the globe has already committed to a certain degree of change in climate system. Losses of production between 5% and 10% worldwide have been predicted by the 2080's in a number of different climate

scenarios (*Parry et al.,* 2004). Agriculture is highly sensitive to climate change, and Bangladesh is one of the most climate vulnerable countries in the world. The reasons for this vulnerability include a precarious geographic location, low-lying topography, and high population density. These factors have the potential to increase the hardships for the people of Bangladesh in future climate change scenarios.

The implications of climate change that will likely have the largest effect on Bangladesh rice production are increases in temperature, precipitation, and the frequency of cyclones. The National Water Management Plan of Bangladesh, prepared by the Water Resources Planning Organization, outlines a variety of other potential implications of climate change on the country. These include increased evapo-transpiration, higher irrigation needs in the winter, reduced trans-boundary flow, and slower accretion of coastal lands.

Based on the General Circulation Modeling, a recent study predicts that there will be a general increase in temperature fluctuation throughout Bangladesh in years to come (*Ahmed et al.*, 2009). Every crop has an optimal temperature range for their vegetative and reproductive growth and when temperature falls below the range or exceed the upper limit, crop production faces constraints. Changing climatic parameters shorten development stages and can reduce the yield of a given variety (*Basak,* 2012). *Islam and Morison* (1992) show that *Boro* season crops often suffer from cold at the seedling stage as well as the reproductive phase, particularly for early planting with short duration rice varieties. This effect will be magnified with increasingly cold winters. Similarly, *Peng et al.* (2004) have shown a clear correlation between increased night time temperature in summers due to global warming and decreased rice yields.

Total annual precipitation may also increase, as monsoon precipitation increases significantly and winter precipitation decreases (reference). Higher intensity monsoon seasons would stress already strained water systems and result in further severe floods in many parts of the country, leaving some crops inaccessible or waterlogged. The loss of rice to floods accounts for nearly three quarters of all lost agricultural output annually (*Paul*, 1993). The threat of extreme flooding became particularly obvious during 2007 when two monsoon floods led to significant losses in the *Aman* and *Aus* rice crops, estimated at 1.8 million tons from the *Aman* crop alone.

Climate change is also likely to bring more extreme natural events, including a potential failure of the monsoon in South Asia while IFPRI simulates an extended drought beginning in 2030 and continuing through 2035 (*Nelson,* 2010). Such a drought would have dire consequences on the food security of the nation. Some reports *(IPCC,* 2007; *CCP*, 2008) have also predicted that greenhouse warming will increase the frequency and/or intensity of tropical cyclones, affecting the southern rice- and grain- growing regions of the country.

According to the IPCC, rising sea levels will wipe out and salinize more cultivated land in Bangladesh than anywhere else in the world. By 2050, rice production is expected to drop almost 10 per cent and wheat production more than 30 per cent. That's a huge risk for a population that is poor and growing. The threats of climate change on food production are heightened by population growth, high food price in international market, land degradation, high input price, and lack of governance. Of course it is impossible to predict the exact effects of climate change, however, it is clear that Bangladesh needs to take immediate and pertinent action to adapt its food strategy to climate change.

CHALLENGES FOR SMALLHOLDER FARMERS

Of the majority of more than 200 million rice farmers who live in Asia as a whole, few cultivate more than two hectares and the same trend extends to Bangladesh (*IRRI*, 2011). Smallholder farming plays a key role in meeting the nutritional requirements of Bangladesh and ensuring food security in the coming decades. However, smallholder farmers are threatened by the productivity losses predicted in climate change scenarios as discussed above. In recent years, Bangladesh has experienced various market phenomena that have discouraged small farmers. For example, increasing input cost for fertilizers, pesticides, price of electricity and diesel has frustrated farmers (*Islam*, 2005). Prevailing market prices for rice have also been unfavorable. Many farmers are being pushed either towards cash crop production (which does not contribute to national food security) or out of agriculture altogether. About 46% of all rural households in Bangladesh own less than 0.2-0.3 ha for farming, while more than 65% of the farmers possess only 0.2 to 1.0 ha (*Begum,* 2002; *Rahman,* 2007). These small farmers work directly in the fields and rely on agriculture as their only means of living.

The vast majority of Bangladesh's farmers live below poverty line. They are unable to increase production easily, since they lack capital for the investment in modern technology. They are highly vulnerable to natural disasters and, while they tend to have large families, they are often unable to send their children to school and often lack sufficient food for the family unit (*Rahman* , 2007). Achieving the Millennium Development Goal (MDG) of halving poverty to 26.5 percent by 2015 will require a growth rate of at least 4.0 percent in agriculture and 7.0 percent in the non-farm sector *(World Bank,*

2009). However, economic and institutional realities, the country's geographical and demographic characteristics, and its vulnerability to natural disasters, make this a very challenging task.

Retaining poor farmers in the agricultural sector of Bangladesh is essential. Smallholder agriculture is the largest provider of food and raw materials at world level. Smallholder agriculture is productive and represents resilience when it comes to shocks of whatever type. Smallholder agriculture is also the largest provider of jobs in the world and it plays an indispensable role in the emancipation of marginalized social groups. Smallholders are able to maintain natural resources and improve the environment if favorable conditions are met.

When market conditions are favorable, smallholders respond positively, they innovate, organize joint market channels, engage in processing agricultural products and gain market power. When, however, markets are imperfect and total value added is distributed in a skewed way, smallholder agriculture will suffer a range of negative consequences that in the end may even cause a de-activation of agricultural production (*FAO,* 2012).

Of course, the more a country urbanizes and industrializes, the more it increases its rate of growth, but there is no way to deny that the survival of the urban people depends on the rural ones who produce the food and supply to the urban markets. That is why balancing the interest of both urban and rural people is necessary in governance.

CONCLUSION AND POLICY IMPLICATION

As shown in this article, the issues of rice yields, climate change, and smallholder farming are closely tied. Though increasing, rice yields in Bangladesh are erratic and inconsistent - profoundly affected by seasonal environmental hazards and changing international prices. Climate change, which is already a reality in Bangladesh, poises threats to these yields now and in the future. Smallholder farmers, who produce the vast majority of the country's rice, are reliant on sufficient rice yields for their livelihoods.

Through the contribution of agriculture to the national economy and employment may diminish further, it will remain in the visible future as the single largest contributor to income and employment generation and a vital element in the country's challenge to achieve self-sufficiency in food production reduce rural poverty and foster sustainable economic development (*Uddin,* 2009). The Government of Bangladesh has the responsibility to ensure that the necessary conditions exist to enable the country to meet these challenges, and for this purpose, a sound agricultural policy is essential. Specifically for this paper, ensuring sufficient yields in all rice growing regions is a laudable goal that can be approached by a) improving current yields, and b) building smallholder resilience in anticipation of the detrimental effects of climate change.

Agricultural extension services provisions (ESP) are fundamental in building farmers' knowledge and capacity for better crop yields and resource management. In 1996, the government enacted the New Agricultural Extension Policy (NAEP) in an effort to improve lacking agricultural support for the country's farmers. The NAEP had an express focus on providing these extension services to all "sizes and types" of farmers (*GoB, 1996*).

ESP in Bangladesh is generally less available for farmers in lower income categories and operating less land. In particular, GoB ESP's remains targeted at male farmers with larger land holdings and higher incomes. Over 41% of farmers in the large farm category (over 7.5 acres) receive ESP's despite cultivating only 16.4% of land and representing 0.3% of farmers. GoB delivery has also failed to take advantage of opportunities to work with farmer groups, which was an additional explicit goal of the NAEP draft in 1996. The Government thus needs to re-visit its ESP policy and refocus its efforts to support the smallholder farmers who need it the most. They are, after all, the ones who are effectively feeding the country.

ESP policy must be implemented with a focus on improving production and building resilience for climate change. A rights-based approach to extension, one that ensures that all categories of farmer (particularly women and farmers in smaller farm households and on lower incomes) are aware of their rights to service provision, is needed. In this way ESP's can enable agriculture to support poverty reduction and food security. This does not imply monopolistic service provision by the state; it implies a managed and coordinated range of service providers meeting the needs of farmers.

Ensuring sufficient yields in climate- and natural hazard-threatened growing regions can be aided by the development and adoption of select hybrid varieties of rice, specifically flood resistant salt-resistant strains. Flood-tolerant rice developed by the International Rice Research Institute (IRRI) helps a rice crop survive underwater for up to ten days. Given the intensity of flooding in Bangladesh, and the additional risk of extreme climate events anticipated due to climate change, submergence-tolerant rice is an important source of security for poor farmers. IRRI has also developed several

strains of salt-resistant rice that can be grown in the salinized soil of the coastal districts. The yields of the new varieties are not much higher than that of old types, but their advantage is the lower chance of losing crops because of saline water intrusion or drought, making them a worthwhile replacement for traditional varieties. This may help keep up harvests in some instances of severe weather, but will not be sufficient to meet growing demand in the country in the face of a wider range of climate impacts.

Of course, elevated pressure for food production may undermine or overlook the deleterious effects of using genetically modified (GM) materials and hybrid seeds that affects human health. Concepts of food safety and the use of GM technologies deserve due attention as far as the health of the consumers and environment are concerned. The GoB should give full attention and fund to development of these seeds and ensure the availability of these rice varieties to climate-threatened farmers through ESP. Ensuring the provision of quality ESP as well as flood- and salt-resistant rice varieties are crucial steps in sustaining the production, and thus livelihoods, of Bangladesh's rice farmers otherwise, it will really be difficult to retain the farmers in food grain production.

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Ecology in Asia

HABITATS OF *Lutrogale perspicillata* IN THE NARAYANI RIVER, CHITWAN NATIONAL PARK, NEPAL: ASSESSMENT OF WATER QUALITY

Paras Mani Acharya*
Sunil Lal Rajbhandari**

ABSTRACT

Analysis of water quality in the otter habitats of the Narayani River was conducted during the month of June, 2012 in order to assess the health of aquatic ecosystem. The analysis of water from 12 sampling stations including an industrial site in Sikrauli estimated the values of parameters in mg/L such as chloride, ammonia, nitrate, orthophosphate, dissolved oxygen (DO), biochemical oxygen demand (BOD), and chemical oxygen demand (COD) at 5.3 ± 3.4; 0.13 ± 0.07; 1.23 ± 0.12; 0.06 ± 0.04; 7.3 ± 0.5; 7.5 ± 4.6; and 21.7 ± 10.4 respectively.

Similarly, water sample from industrial area in Sikrauli was also analyzed for heavy metal concentration. The presence of heavy metals such as mercury, lead, arsenic and cadmium was not detected. But, chromium, iron and manganese showed the concentration of 0.02, 10.5 and 0.2 mg/l, respectively. All the water quality parameters assessed were below the threshold level prescribed by the Nepal Government and therefore, we concluded the water in the study area in healthy condition. This study stresses the need of periodic water quality assessment and monitoring of otter habitats to ensure the healthy wetlands for the conservation of aquatic species in the river basins of Nepal.

Keywords: Ammonia, nitrate, dissolved oxygen, heavy metals, Narayani River, otter habitats, water quality.

INTRODUCTION

The otters are mammals of the Mustelidae family which are carnivorous in habit. They are semi-aquatic dwelling in wetland habitats such as rivers, marshes and lakes. The foods of otters are amphibians, fish and crustaceans with seasonal variations. The otters are top predators and important biological indicator of the health of rivers and wetlands. There are 5 species of otter in Asia, namely 1) Eurasian otter, 2) Smooth coated otter, 3) Hairy nose otter, 4) Small clawed otter, and 5) Sea otter. Of these only 2 species are recorded in Nepal: 1) Eurasian otter, *Lutra lutra; and* 2) Smooth-coated otter, *Lutrogale perscipillata*.

The smooth coated otter essentially is a lowland species. Generally, they use large rivers and lakes, peat swamp forest, mangrove forest along the coast and estuaries, and in South-East Asia,they even use rice fields for foraging. The smooth coated otter, *Lutrogale perscipillata* is included in Vulnerable (VU) category by IUCN and in the Appendix II of CITES. The *Lutrogale perscipillata* is one of the least studied species though both species found in Nepal are being protected by Aquatic Life Protection Act, 2002. However, the Nepal government still has not included this species in the protected list despite their population being in the declining trend and only restricted to fragmented small populations in the major river basins.

***Paras Mani Acharya** is an Associate Professor, Tribhuvan University, Patan Multiple Campus, Nepal. Corresponding author, E – Mail: otterofhimalayas@yahoo.com

****Sunil Lal Rajbhandari** is Professor, Tribhuvan University, Amrit Science Campus, Nepal. E-mail: sunilrajbhandari@hotmail.com.

In Nepal, the otter population are severely threatened by increasing human disturbances – overfishing, poisoning, industrial pollution, reduction in prey biomass, grazing, sand and boulder extraction and construction of large hydro-electric dams (*Acharya and Rimal*, 2007;*Acahrya* and *Lamsal*, 2010; *Acharya et al*., 2010; *Acharya and Rajbhandari*, 2012; *Rajbhandari* and *Acharya*, 2013).

The increasing industrialization and intensification of agriculture in Nepal is increasing the pollution load in the rivers while in the absence of government measures, the pollution load will continue to increase. Discharge of untreated industrial effluents, domestic waste-water, and mineral rich agricultural runoff into the water bodies is common in Nepal. This has enhanced pollution, eutrophication and excessive growth of weeds, particularly alien species such as water hyacinth thereby resulting in decreased species diversity and loss of function, e.g. potable water supply (*IUCN*, 2002).

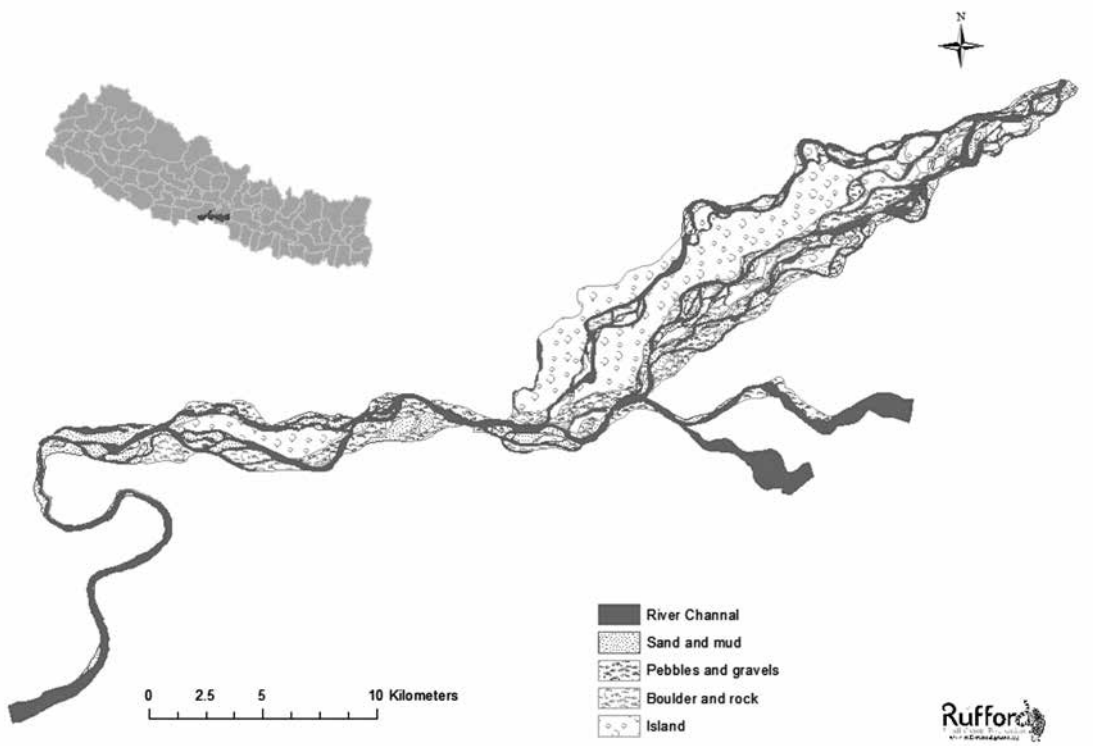
Very few studies have been undertaken focused on the effects of industrial pollution on aquatic life such as *gharial*, otter and dolphin. *Sharma et al.* in 2007 reviewed the water quality studies in the rivers of Nepal, but this review does not cover the effects of agricultural and industrial pollution on aquatic fauna. However, some studies (*Sah et al.*, 2002) indicated that industrial pollution from the paper pulp industry had adverse effect on the fish diversity.

Some recent studies by *Bhattarai and Acharya* (2007) and *Diwaker et al.* (2009) determined the water quality of Beeshazar Lake Complex and Ghodaghodi lake complex (Ramsar sites in Nepal).This paper deals with the preliminary study on the status of water quality in the otter habitats of the Narayani River.

STUDY AREA

The study was carried out in Narayani river of the Chitwan National park (CNP) (27º 34' to 27 º 68' N and 83 º 87' to 84 º 74' E) in Nepal, a UNESCO World Heritage Site from April 2011 to March 2012 (Figure.1). This park is one of the largest (932 km^2) remaining natural lowland forest communities in the outer foothills of the Himalayas.

Figure 1: Narayani River within CNP



The regional climate is sub-tropical monsoon, with an average yearly precipitation of 230 cm; 90% occurring during May-September. Chitwan's vegetation has been influenced by major river systems with exception of human-related disturbances. The Narayani and the Rapti rivers have markedly influenced the soils of the valley, almost eliminating the original basin deposits (*Carson et a.l*, 1988).

The CNP is characterized by tropical to sub-tropical forest where Sal forest (*Shorea robusta*) is considered "climatic" climax which covers about 70% of the park *(Bolton,* 1975). The deciduous riverine forest constitutes about 7% of the park (Bolton, 1975) with early succeeding species like *Bombax ceiba* and *Trewia nudiflora* with *Ephretia laevis*, *Litsea monopetala* and *Premna obtusifolia* (*Lehmkuhl*, 1983). The grassland makes up about 23% of the park (Bolton, 1975) and form a diverse and complex community over 50 species. The boulders (wetlands and rivers) constitute about 10.9% and Khair and Sisso cover 4.6% of the park.

The park with its pristine ecosystem is one of the best protected areas in South Asia harboring many large mammals such as one-horned rhinoceros, Bengal tiger, gaur, wild elephant, leopard, four species of deer, gangetic dolphin and the smooth coated otter. In addition, the other aquatic fauna of the rivers include gharial and mugger crocodiles, 4 species of turtle, over 170 species of wetland birds and 113 species of fish.

METHODOLOGY

Water sampling and processing of water samples

Water samples were collected from 12 key otter habitats to determine the degree of pollution and its possible consequences on otter habitat and population. Important water quality variables such as dissolved oxygen, B.O.D., C.O.D., temperature, total phosphates, nitrates, turbidity, total solids, were measured. During the sample collection, the mouth of the sampling bottle was directed against the water current. The samples were kept cool in an icebox during the transport period. Samples for physico-chemical parameters were collected in one liter capacity clean polyethene bottles. Samples for toxic metals and iron and manganese analysis were collected in 500 ml polyethene bottles and were preserved with concentrated nitric acid. Most of the parameters were analyzed on the same day of sample collection. The samples were preserved according to the standard norms for analyzing other parameters.

For DO, the samples were collected in BOD bottles and DO was fixed with 2 ml of manganous sulphate and alkali iodide azide. DO was measured by using Winkler's modified method (iodometric titration). For BOD, two BOD bottles were used for each sample. First bottle was filled and directly incubated at 20˚C for five days and the second bottle was preserved for initial DO analysis. After completion of incubation, the final DO was measured for the second bottle. The difference between initial and final DO was calculated as BOD.

The pH and electrical conductivity were measured by WTW electrodes. COD was analyzed by titration with ferrous ammonium sulfate after dichromate digestion of the sample. Chloride was determined by argentometric titration (titration with silver nitrate). Concentrations of ammonia nitrate and orthophosphate and turbidity were measured by spectrophotometric method. Total suspended solid was determined by gravimetric method.

Physico-chemical analysis of water

All the Physico-chemical parameters (except total nitrogen) were determined according to the methods described in APHA, AWWA, WEF (1988). The important physico-chemical characteristics of water samples from 12 locations in between Sikrauli to Bhosarghat of western branch of the Narayani River along the Nawalparasi district were determined with the objective of assessing the status of river water quality for the protection of key aquatic species of river basin including otters. All these samples are from key otter bearing areas as identified during June 2012.

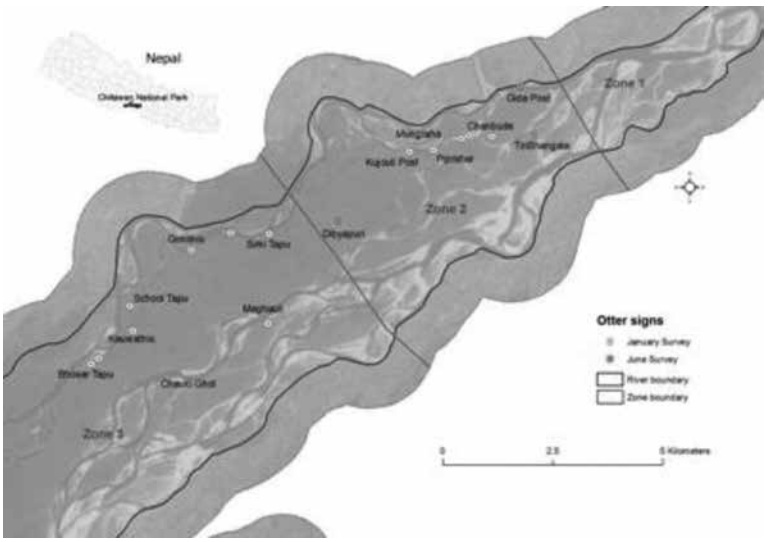
The heavy metals such as Chromium, Mercury, Lead, Arsenic, Cadmium, Iron, and Manganese were determined by Atomic Absorption Spectrometer (ASS).

RESULTS AND DISCUSSION

Distribution of otter habitats

A survey conducted in January 2008 and June 2008 from Gidda to Bhosarghat on the western channel of the Narayani River identified key otter habitats (Figure 2).

Figure 2: Distribution of otter signs in Narayani River



Physico-chemical parameters analysis

The physico-chemical parameters are considered as the most important principles in the identification of the nature, quality and type of the water for any aquatic system. The physico-chemical analysis of water with mean and standard deviation is shown in Table 1.

Table 1: Physico-chemical characteristics of water with mean and standard deviation

Parameters	Unit	Value
Temperature	^{o}C	24.8 ± 0.4
pH		8.1 ± 0.2
Electrical conductivity	µS/cm	211.3 ± 6.0
Turbidity	NTU	60.7 ± 31.4
Total suspended solid	mg/L	193.3 ± 76.1
Chloride	mg/L	5.3 ± 3.4
Ammonia	mg/L	0.13 ± 0.07
Nitrate	mg/L	1.23 ± 0.12
Orthophosphate	mg/L	0.06 ± 0.04
Dissolved oxygen	mg/L	7.3 ± 0.5
Biochemical oxygen demand (BOD_5)	mg/L	7.5 ± 4.6
Chemical oxygen demand (COD)	mg/L	21.7 ± 10.4

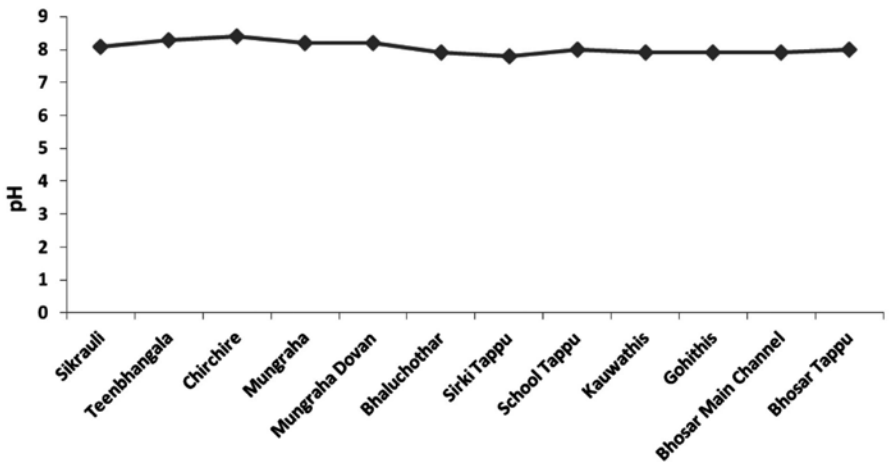
TURBIDITY

The mean value of turbidity was 59.83 with the standard deviation (±) 29.23. The maximum value of turbidity was found to be 92.0 NTU and the minimum value was 24.0 NTU. All the values of turbidity observed exceeded the Nepalese aquaculture standard of 25 NTU. High turbidity values could be due to suspended matter contributed by run off from the catchment area.

pH

The mean value of pH was 8.05 with the standard deviation (±) 0.1803. The maximum pH was found to be 8.3 and the minimum value was 7.9. All the pH values are within the aquaculture standards of 6.5-9.9. Although pH may not have direct effect, high pH values favor gaseous form of ammonia which is more toxic than ammonium to fishes (Figure 3).

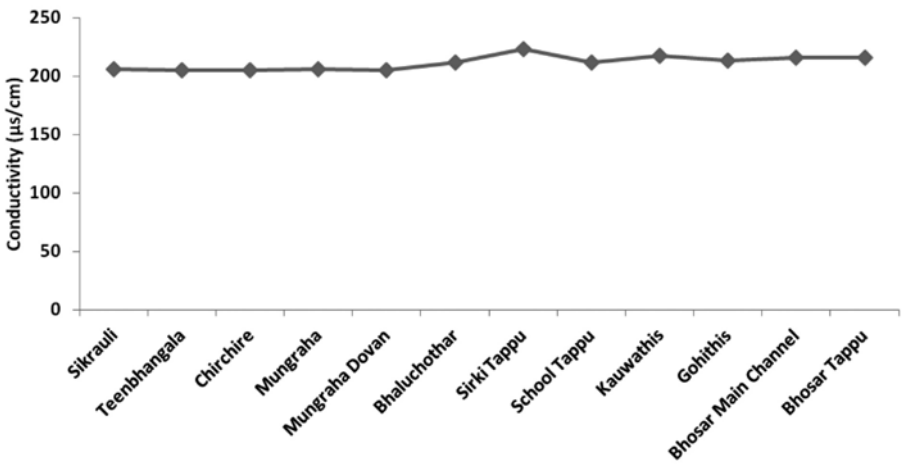
Figure 3: pH values of sampled sites



Electrical Conductivity

The mean value of electrical conductivity was 211.33 with the standard deviation (±) 5.7203. The maximum value was 223 μs/cm and the minimum value was 205 μs/cm. Usually, unpolluted water has low conductivity, below 100 μs/cm^2. Highest conductivity value of 223 μs/cm was observed in Sirki Tappu. It could be contributed by natural runoff from grassland and forest areas (Figure 4).

Figure 4: Conductivity values of sampled sites



Chloride

The mean value of chloride was 5.417 with the standard deviation (±) 3.2005. The maximum value of chloride was

found to be 14.0 mg/L and the minimum value was 1.0 mg/L. Usually high concentration of chloride together with high ammonia indicates sewage pollution. All the chloride values were well below the standard value of 600 mg/L. Low values of chloride together with low values of ammonia suggest it is less likely that the water is contaminated with sewage.

Ammonia

The mean value of ammonia was 0.133 with the standard deviation (±) 0.0624. The maximum value was found to be 0.2 mg/L and the minimum value was 0.1 mg/L. The higher levels of ammonia content in surface water are likely due to contamination from domestic sewage or agricultural runoff. Ammonia is particularly harmful to fish even in low concentrations. Alkaline pH favors presence of gaseous ammonia, below pH 7.

The aquaculture standard of ammonia is 0.025 mg/L. All the values of ammonia observed exceeded the standard. Therefore, water may not be as suitable for aquaculture as far as the concentration of ammonia is concerned. However, different species of fishes may be susceptible to different concentrations of ammonia. Molecular ammonia is toxic and ammonium is not. Gaseous ammonia (molecular ammonia) above 0.2 mg/L can cause death of several species of fish.

According to *Chapman* (1996), NH_3-N concentration in unpolluted waters should normally be <0.1 mg L^{-1}, but that it might occasionally reach 0.2 mg L^{-1}. Concentrations higher than this value suggest organic pollution from sources, such as domestic sewage, industrial wastes and fertilizer run-off.

A study carried out by *Hassan et al* (2005) in El-Kabir River found the value of ammonia-nitrogen concentration exceeding the 0.1 mg L^{-1}, averaging 0.27 mg L^{-1}, with the highest individual concentration equal to 2.54 mg L^{-1}.

Nitrate

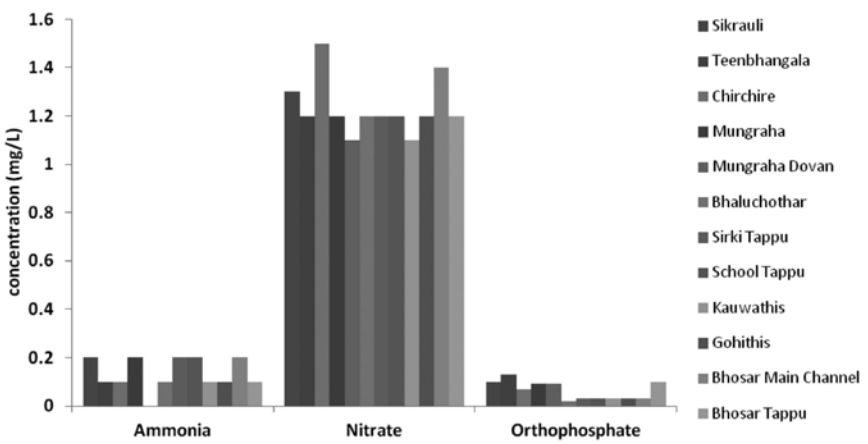
The mean value of nitrate was 1.233 with the standard deviation (±) 0.1106. The maximum value was found to be 1.5 mg/L and the minimum value was 1.1 mg/L. Nitrate can come directly from fertilizer application or from biological oxidation of ammonia. Nitrite is unstable and is readily converted to nitrate or ammonia. Fertilizer use in agriculture and domestic sewage are the main sources of nitrate contamination. Nitrate concentrations are also fairly low and meet the standard in all the sampling stations. It seems there is no risk from the existing nitrate concentrations.

Nitrate-nitrogen is the most common form of N in fresh water, seldom exceeding a concentration of 0.1 mg L^{-1}. Hassan et al. (2005) in El-Kabir River also found the mean value of nitrate-nitrogen as 1.23 mg L^{-1}. This concentration might be enhanced by municipal and industrial waste waters, leachates from waste disposal,sanitary landfills, and from fertilizers. Human influences can increase the concentration to 1.0-5.0 mg L^{-1}. Values >5.0mg L^{-1} usually indicate pollution by human and animal wastes (*Chapman*, 1996).

Phosphate

The mean value of orthophosphate was 0.0625 with the standard deviation (±) 0.0365. The maximum value was found to be 0.13 mg/L and the minimum value was 0.03 mg/L. Phosphate itself may not pose direct threat to health but it can enhance eutrophication which can deplete dissolved oxygen and hinder light penetration in water bodies. Values of phosphate are well below the standard value of 0.6 mg/L in all the 12 sampled stations (Figure 5).

Figure 5: Concentration values of ammonia, nitrate and orthophosphate



Phosphorus is usually present in natural waters as phosphate. It is a plant nutrient needed for growth, and a fundamental element in the metabolic reactions of plants and animals. Plant growth is limited by the amount of phosphorus available. In most water bodies, phosphorus functions as a "growth-limiting" factor because it is usually present in very low concentrations. Phosphorus stimulates the growth of rooted aquatic vegetation. These plants, in turn, draw phosphorus previously locked within bottom sediments and release it into the water, causing further eutrophication.

Dissolved oxygen (DO)

The mean value of DO was 7.258 with the standard deviation (±) 0.444. The maximum value was found to be 8.0 mg/L and the minimum value was 6.4 mg/L. Concentration of DO in water is influenced by temperature, dissolved salts and turbulence. Low temperature, low dissolved salts and turbulence increase DO in water. Fish normally requires 5 mg/L although some can live below this value. Organic pollution tends to decrease DO level. The DO values in all the stations were above the minimum required limit of 5 mg/L.

DO is essential for the maintenance of healthy lakes and rivers. The presence of oxygen in water is a positive sign, the absence of oxygen is a signal of severe pollution. Rivers range from high to very low levels of DO- so low, in some cases that they are practically devoid of aquatic life. Waters of consistently high DO are usually considered healthy and stable ecosystems capable of supporting many different kinds of aquatic organisms (*Mitchell & Stapp*, 1996).

Biochemical oxygen demand (BOD)

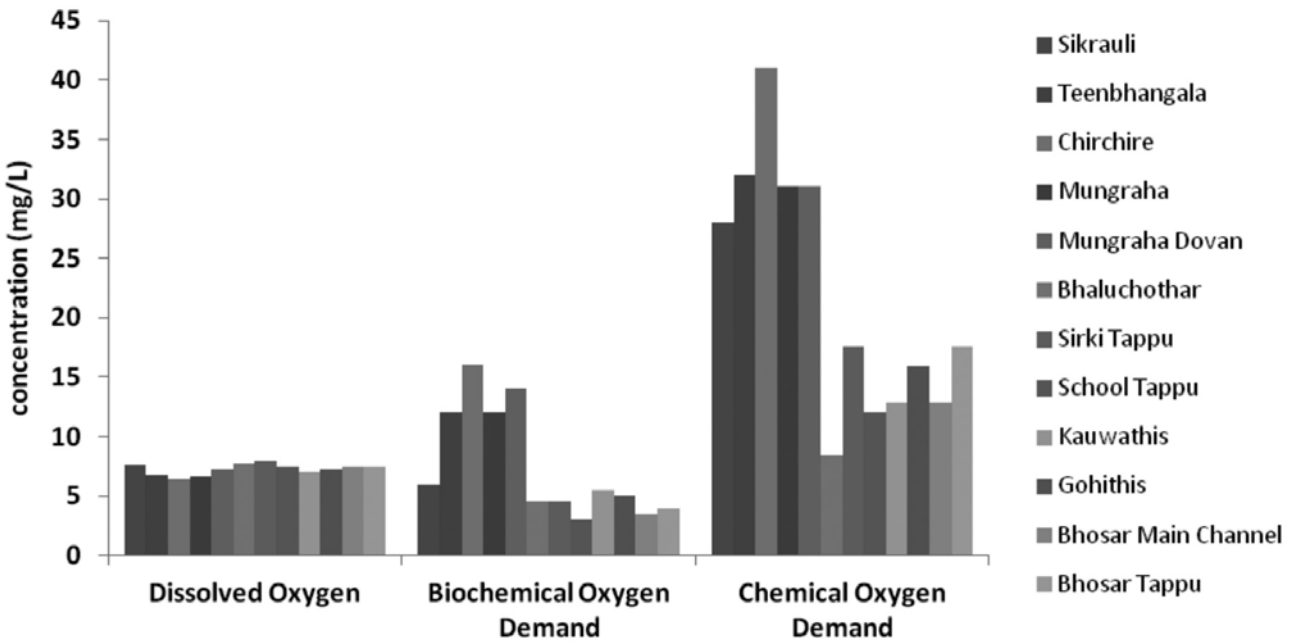
The mean value of biochemical oxygen demand was 7.5 with the standard deviation (±) 4.4159. The maximum value was found to be 16.0 mg/L and the minimum value was 3.0 mg/L. Except in the station Chirchire where the BOD values was 16 mg/L, all the other stations meet the standard value of 15 mg/L.

In rivers with high BOD levels, much of the available DO is consumed by aerobic bacteria, robbing other aquatic organisms of the oxygen they need to live. Organisms that are more tolerant of lower DO may appear and become numerous, such as carp, midge- larvae, and sewage worms. Organisms that are intolerant of low oxygen level, such as caddis fly larvae, mayfly nymphs, and stonefly nymphs, will not survive (*Mitchell & Stapp,* 1996).

Chemical oxygen demand (COD)

The mean value of chemical oxygen demand was 20.93 with the standard deviation (±) 10.5494. The maximum value was found to be 41.0 mg/L and the minimum value was 8.4 mg/L. COD is used to indicate pollution strength of both sewage and industrial effluent. The COD values are also within the standard COD value of 40 mg/L except at the stations Sikrauli and Chirchire (Figure 6).

Figure 6: Concentration values of DO, BOD and COD



Temperature

The mean value of temperature was 24.83 with the standard deviation (±) 0.3727. The maximum value was found to be 25˚C and the minimum value was 24˚*C*.

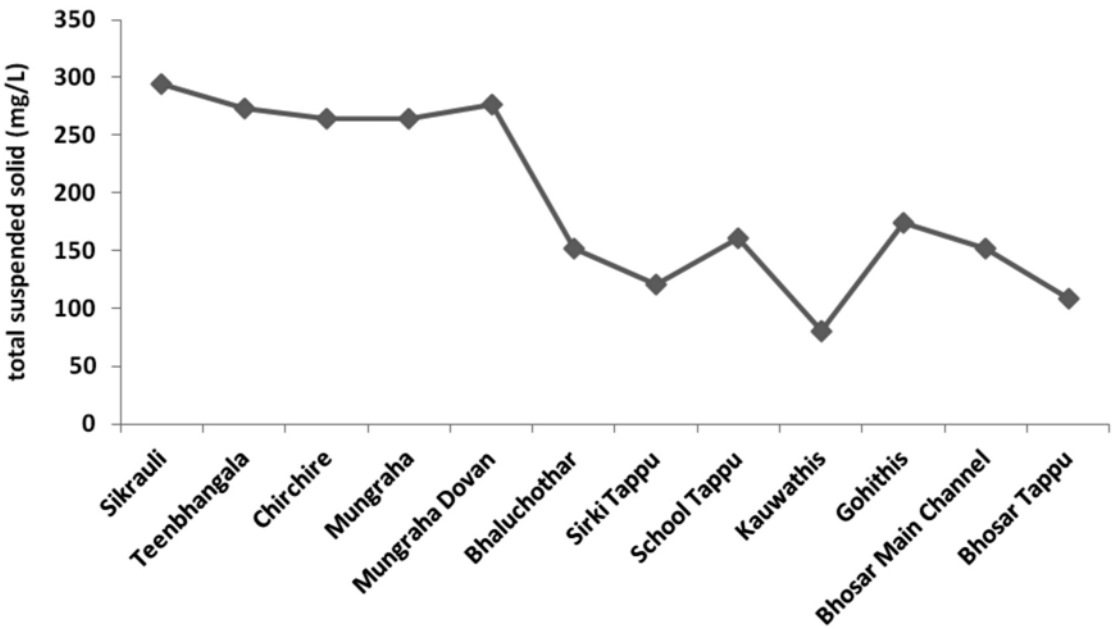
Carbon dioxide

The mean value of carbon dioxide was 4.583 with the standard deviation (±) 0.8620. The maximum value was found to be 6 mg/L and the minimum value was 3 mg/L.

Total suspended solids

The mean value of total suspended solid was 194.75 with the standard deviation (±) 72.1816. The maximum value was found to be 277 mg/L and the minimum value was 80 mg/L (Figure 7).

Figure 7: Total suspended solids in the sampled sites



Heavy metals

Water samples from Sikrauli, which is an industrial area were taken for analyzing the heavy metals and its impacts on the aquatic life. Iron is dissolved as ferrous iron in anaerobic groundwater. Upon contact with air it precipitates as ferric iron. Therefore, in surface water because of oxidation, iron is normally not detected in appreciable concentration. Usually, manganese is found in lower concentration than iron. Iron and manganese can cause blackening of surfaces. Fish seems to be susceptible to iron and manganese content in water. The aquaculture standards for iron and manganese are 0.01 mg/L and 0.1 mg/L respectively. Iron and manganese measured in Sikrauli station exceeded the limit (Table 2).

Table 2: Heavy metal concentrations of water in Sikrauli

S No.	Parameters	Mg/L
1	Chromium	0.02
2	Mercury	< 0.005
3	Lead	< 0.01
4	Arsenic	< 0.005
5	Cadmium	< 0.003
6	Iron	10.5
7	Manganese	0.2

The presence of heavy metals such as mercury, lead, arsenic and cadmium is not detected. But, chromium, iron and manganese show the concentration of 0.02, 10.5 and 0.2 mg/L, respectively.*Sah et al.* (2002) reported that heavy metals such as Fe, Cu, Pb, Zn, Mn and B present in effluents from paper and pulp were not above the threshold value in fish collected from polluted site (Gaidakot). There is a need to carry out a detailed investigation of impacts of industrial pollution on the key indicator species of river basins (*Acharya & Rajbhandari,* 2012; *Rajbhandari & Acharya,* 2013). *Sah et al* .(2002) estimated Pb content in paper and pulp effluents between 0.01 and 0.28 mg/l. In Narayani River, the average content of Pb in water was from 0.013 to 0.04 mg/l which was higher at the mixing zone (*Sah et al.*, 2000).

This study estimated the value of Pb in Sikrauli near the industrial area as less than 0.01. Other heavy metals such as Chromium, Mercury, Arsenic, Cadmium, Iron and Manganese were below the threshold level.All the water quality parameters analyzed in the study were below the threshold values. In river Narayani, otters occurred in densely covered, sandy islands between shallow low-water channels, unpolluted, with less human disturbances. Otter distribution agreed with reported otter preference in medium-sized fluvial habitats, with high backside vegetation cover, unpolluted, with low or very low human disturbance and surrounded by forests (*Prenda et al*., 2001)

CONCLUSION

The water quality analysis conducted in 12 sampling stations within otter habitats in CNP showed normal values. Therefore, there is no evidence of industrial pollution in the area. However, detailed investigation and seasonal monitoring of water quality is required to understand the health and functions of the ecosystem. The impact of pollutants on aquatic life is less known in the river systems of Nepal. Hence, the protected areas should be on priority in designing water quality monitoring protocols and same ought to be implemented effectively in the area to strengthen the aquatic life conservation.

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Indology

ROLE OF BUDDHIST SIDDHACHARYAS IN EXPANSION OF VAJRAYANA ART AND ICONOGRAPHY

Geetika Kaw Kher*

ABSTRACT

This paper aims at critically looking into the origin and development of the Order of the Buddhist Siddhās and their role in shaping the Vajrayāna art and iconography. The impact of Theory of Dhyani-Buddha, their consorts and series of emanations as propounded in the Guhyasamāja Tantra had been immense. The appropriation and sharing of the semiotics of new pantheon with the parallel evolving sampradāyas like Natha and Kapalika created a veritable multi-hued imagery of deities that has enriched Indian art and culture for aeons.

Keywords: Dhyani-Buddhas, Guhyasamāja, Karunā, mahāsukha,Manjusrimulākalpa, Natha, Padamsambhava, Prajñā , sahaja, Śūnyatā ,Upāya.

INTRODUCTION

Vajrayāna school of Buddhism is believed to be a product of 3rd C.E. According to Lama Taranath, tantricism existed from very early times and was transmitted in the most secret manner possibly from the time of Asanga (3rd -4th CE) down to the time of Dharmakirti (600-650C.E.).[1] Thus for around 300 years tantricism was handed down from Gurus to disciples in the most secret manner before its followers could flourish in number and openly declare themselves as a sect. These teachings got sufficient publicity during the middle of the 7th C.E. through the teachings and mystic songs of the 84 Siddhācarayas who incorporated Vajrayāna philosophy in their writings. It is also around this time that we see the inclusion of Vajrayāna deities in Indian art.

These Siddhas are believed to have been endowed with supernatural powers achieved through meditation and physical exercises and their names are recorded in Jyotirisvara's ***Varnaratnākara.*** An Account of their lives and works are preserved in Tibetan canon and in the histories of Bu-ston, Gos –lo-tsa-ba, Taranath, Sumpa-khan-po and others. They are also known from medieval Nepalese tradition as well as from their songs preserved in ***Caryagitikosa*** or ***Caryascaryaviniscaya.***[2]

The fact that tantric and mystic practices as described in Vajrayāna literature were prevalent from antiquity and were well known to Buddha himself can be corroborated by an example from the *Pag-Sam-Zan-Zang***,** a Tibetan text compiled in 1747 A.D. and the *Sadharmapundarika*, another Buddhist scripture. Both these texts have interesting references to Vajrayāna Buddhism. According to them, Buddha had assured Śāriputra, one of his chief disciples, that after countless generations, Śāriputra would be reborn as Padmasambhava (Padamsambhava is also known as the Second Buddha across the Himalayan region and Mongolia), and he would attain enlightenment at Budhhakshetra Uddiyana, the place

***Geetika Kaw Kher** is Asst. Professor at Amity School of Fine Arts (ASFA) and teaches History of Art, Aesthetics and Art Criticism. She is an Art historian, Aesthetician and has done her research on "*Dynamics between Philosophy and Practice in Lakulisha-Pashupata Order*" from Dept. of Art History and Aesthetics, M.S. University, Gujarat.

from where the Vajrayāna sect is believed to have originated. Moreover in ***Sannyasa Upanishad*** II.13 it is stated that though Buddha himself was well versed in tantrik rituals, he did not permit the use of *panchmakaras* by his disciples. Hence, even during his lifetime many monks revolted against his injunctions and were thrown out of the order. Probably this resulted into formation of secret conclaves called '*Guhya-Samaja*'. The followers of *Guhya-Samaja* introduced their doctrines into Buddhism by the composition of a new *Sangiti* or collection of verses, all of which interestingly were supposed to have been delivered by Buddha himself in a secret assembly.

To understand this tantrik nature of the order, the paper will look into the interesting connection of Vajrayāna School to highly esoteric Shaivite orders like *Kapalikas* and *Natha Sampradaya* in the light of some textual and visual material.

GUHYASAMAJA TANTRA

Bhattacarya dates *Guhyasamaja Tantra* to 3rd C.E. during Asanga's time and suggests that it was one of the earliest Buddhist tantras to be written.[3] His dating and contention agrees with Taranath's account. The text seems to have been an inspiration for later tantrik texts and was translated into Chinese during the 10th C.E. The translation in Tibetan forms a paThis text introduced two very important concepts into Buddhism. First was the element of *Shakti* (feminine power) and secondly the five Dhyani Buddhas with their female consort and extended family. From the latter arose various cults associated with the Vajrayāna and Buddhists were divided according to the relative importance given to one or the other of these Dhyani Buddhas. Moreover such a huge pantheon gave impetus to the creativity giving rise to beautiful depictions of these deities as described in various tantrik texts authored by various Siddhas. The purpose for which the *Guhyasamaja* was written seems to indicate a short and correct path for obtaining Buddhahood or emancipation through the Yogic processes. The philosophy of this text clearly suggests that perfection cannot be achieved by difficult and painful processes but only by the satisfaction of all desires can one reach the highest form of bliss. Hence, it vehemently criticizes the earlier strict and difficult rules and regulations followed by the Buddhist Sangha.

The repeated emphasis on the feminine aspect through various stories and anecdotes points at the effort made to include the concept of *Shakti* in Buddhist pantheon which later on became an important part of religion, art and iconography. In the 8th chapter while describing the different ceremonies of initiation (*Abhiseka*) mention is made of Prajñābhiseka or initiation of the disciple with Prajñā (प्रज्ञा) or Shakti represented by a woman and whom the disciple has to accept and vow never to abandon in his life. This is known as '*Vidhyavrata*' and Buddhahood is unattainable without undertaking this vow (*vrata)*. Hence we see how earlier rules of chastity were not only openly challenged but even considered futile.

Moreover in the 17th chapter of the *Guhyasamaja Tantra,* it is mentioned that Buddha never revealed the secrets of *Guhyasamaja* earlier because people in those times were not enlightened enough to grasp the mysterious doctrines and had to undergo number of births to attain Buddhahood while the followers of this system could attain enlightenment in a flash and would be able to take their place among *tathagatas* in this very life.[5] Hence the text attracted the attention of the later tantriks affiliated to Buddhism and enjoyed a great popularity among them. The Siddhacaryas and Vajracaryas were highly influenced by its teachings and we find many translations of commentaries made by them preserved in Tibetan Tangyur as most of the original ones in Sanskrit are lost. Some Siddhas like Indrabhuti and Padmavajra made digests of the whole tantra in their works, quoting as authority passages from the *Guhyasamaja* in support of their contentions. Among the earliest commentaries on *Guhyasamaja* by Siddhacaryas , those of Nagarjuna (645 C.E.), Shantideva (695 C.E.) Krishnacarya (717 C.E.),Lilavajra (741 C.E.), Ratnakarashanti (978 C.E.) are worth mentioning and it is through these writings that the text gained popularity among masses and a new form of Buddhism comprising of huge pantheon of deities , their families, extended families, associated deities etc started to develop.

MAHASIDDHAS

Mahasiddhas are famous for attaining direct realization of the Buddha's teachings within a single lifetime, for their miraculous powers, and for giving impetus to tantrik art and thought in Buddhism. When Buddhism took root in Tibet, these Siddhas provided important links between Indian and Tibetan Buddhism, giving life to lineages and art forms which have continued in Tibet up to the present. Keith Dowman describes Siddhas as the men who embodied the tantric ethos and the aims and the ideals of Indian culture between 8th -12th CE, as generators and directors of the creative energy that converted the people and transformed society.[6] According to him, the number 84 of the Siddhas is more symbolic than actual, as there is lot of discrepancy in their names in various texts. Thus the 84 Mahasiddhas can be seen as archetypes representing the thousands of adepts of the tantric way. However the most important names which comes across in almost all the genealogies as well as visual depictions are given in the Table 1.

Table 1: List of Important Buddhist Siddhacharyas

Taranath's account (1608A.D.)	**Srichakrasamvara** (8^{th} century A.D.)	**Sumpa Khenpo's account** (Early 12^{th} century A.D.)
• Saraha/Rahulbhadra, the author of *Buddhakapala Tantra*, was born in a Brahmin family but ridiculed the caste system • Luipada, author of *Yoginisamcharya* • Kambala and Padmavajra, authors of *Hevajra Tantra* • Krishnacari, author of *Samputatilaka* • Lalitavajra, author of *Krsnayamari Tantra* • Gambhiravajra, author of *Vajraamrita* • Kukkuri, author of *Mahamaya* • Pito, author of *Kalachakra Tantra*	• Saraha • Nagarjuna • Siddhashabari • Luipada • Dombipa • Tili (Tilopa) • Naro/Naropa • Dombi junior • Kusalibhadra	• Saraha • Nagarjuna • Sabari • Lui • Vajraghanta • Kacchapa • Jalandhari • Krisnacharya • Guhya • Vijya • Tailo (Tilopa) • Naro (Naropa)

The major distinction between these Siddhas and other *sanyasis* was that the former lived with people at the grassroot level. Many of them married and did not shun the pleasures of life. They taught more by examples and attitudes than sermonizing and philosophizing. In fact, their contempt for hairsplitting logic and complex theological and philosophical debates can be seen in their various songs. Their teachings were completely unconventional and had no regard for societal rules and regulations. The ultimate goal that they strived for was '*Mahamudra siddhi*' i.e. the mystical experience of the oneness of all things and an ultimate feeling of emptiness '*Śūnyatā'* (Vacuity). The *mahamudra* is realized by fusion of *Śūnyatā* and *Karunā* symbolized esoterically by the *Yab-Yum* figures seen widely in the Vajrayāna art.

VAJRAYĀNA ART AND ICONOGRAPHY

Italian scholar Giuseppe Tucci(1895-1984), who taught at Śantiniketan and established the research of various Buddhist texts, observes , "*The Vajrayānic deities were subject to a long process of duplication and multiplication. To many Siddhas absorbed in their meditation the same deity appeared during its realization under different aspects. Thus it happened that the Sadhana increased, each one of them having its foundation on the particular epiphany which became manifested to the evoking saint. That is why there are so many varieties of gods and goddesses in their different aspects either appeased (santa) or wrathful (raudra).When the ecstasy ceased the Siddha who had evoked the deity in front of him, wrote down its description and the vidhi or the method by which to force the deity to manifest itself*."[7]

The reason that there are huge numbers of deities is due to the difference of disposition, preference and intellectual acumen of the human being and the idea that each man has to find his goal according to his temperament. Thus each ***yidam*** represents a certain mode of goal orientation and goal attainment. Within the Buddhist religion, various techniques of visualizing these symbols have been developed as these were meant to produce them out of us (***utpanna krama***) and finally to make them disappear again in us .Thus the religious reality is apprehended in and through the life of these images. Their acceptance is a condition of understanding and of attaining richer and fuller religious insight (***Sampanna krama***). The identification of most of the deities is possible by referring to their various sadhanas as given in the Sadhanamala, an extremely important text of tantric Buddhism.

The extremely philosophical and idealistic concepts of Mahayāna had to incorporate various popular cults and rituals for propagation .Thus various tantric deities and cults came into its fold. Then, there was emergence of various *Dharinis*, a class of Mahayānic literature which was composed between 4^{th} - 8^{th} C.E. and which refers categorically to terms like *mantra, mudra, mandala karya ,charya* etc by which usually tantrik cults are characterized. Some of the important ones are as follows:

1. ***Mahamayuri Vidyarajni***, which was translated into Chinese by Srimitra as early as 4th CE.
2. ***Ekadashamukha,*** translated into Chinese by Yashogupta in 6th C.E
3. ***Nilakantha dharini***, discovered in Central Asia

Among the various Mahayānic cults like the cult of Bodhisattvas, cult of *Prajñā*paramita etc., the cult of five Dhyani Buddhas gained extreme popularity. Their iconographical antiquity can be gauged by their inclusion in the Gilgit manuscript dated to 5th-6thC. AD and containing many mantras and dharinis. As will become clear from the *Table 2* this cult incorporated worship of various gods and goddesses separately and in *Yuganaddha* (united) form. The latter form suggests the union of *Prajñā* and *Upāya* and relates to the union of *Śūnyatā* and *Karuna* in Mahayana texts and *Shiva* and *Shakti* is Shaivite tantras.

In practice, *Vajrayāna* introduced the theory of five dhyani buddhas as embodiments of the five *skandhas* or cosmic elements, formulated the theory of their kulas or families and also that of their emanations, the male and female deities thus giving rise to a huge number of deities in various mudras and postures. In the *Sadhanamala,* Dhyani Buddhas are to be meditated on as being in union with their female counterparts/shaktis[8]. Tantrik art compresses all of the important points of the Buddhist teachings into a very tight visual package of symbols where each image contains a central metaphor which in turn serves as the thematic matrix out of which the symbols emerge.

In the first chapter of the ***Guhyasamaja tantra*** itself, Buddha is seen multiplying himself by sitting in different *samadhis* (meditations) and constructs the mandala of five Dhyani Buddhas, their *Shaktis* and the four guardians of gates thus emphasizing the fact that these deities are none other than the emanations of the Adi-Buddha himself. The interactions between these deities comprise the whole section of this tantra. Moreover in every Buddhist tantric work, great importance is given to the theory of Dhyani Buddhas or the Five Jinas, the great conquerors. Either they are directly mentioned or the Bijamantras or deities emanating from them are mentioned. Hence it wouldn't be wrong to say that this concept serves as the very ground on which the grand structure of Buddhist pantheon is built. **Table 2** mentions in detail the various aspects of Dhyani- Buddhas.

Table 2: Dhyani- Buddha Pantheon in Vajrayāna

Dhyani Buddha emanating from Adi-Buddha/Vajrasattva	Color	Shakti/ Prajñā/ Nairatma	Cosmic element	Seed Syllable/ mantra	Bodhisattva
Amitābha (अमिताभ) • Meaning: Infinite light • Originates in West, from red syllable Hrīh (ह्रीः) • Resides in Sukhavati heaven • Embodiment of attachment and stands for vital fluid • Alphabets letters beginning with ta (retroflex) - ट, ठ, ड, ढ, ण • Transformation of emotional defilement(*kleśa)*:Desire (raga) • Symbol -lotus • Main Gods emanating 1. Mahavala 2. Saptasatika 3. Hayagriva • Main goddesses 1. Various forms of Kurukulla 2. Bhrikuti 3. Mahasitavati • Gesture- Dhyāna Mudrā • Throne-bearer-Peacock • Wisdom-Discriminating • Corresponding Body Centre at Throat- Visuddha cakra • Shape of Body centre- semi-circular bow	Red	Pandāravāsinī Embodiment of element of fire and has a lotus symbol Seed syllable: red *Pam*	Fire/ sanjñā	Hrīh (ह्रीः) / Om amitābha hrīh	Padmapani later becoming popular as Avalokiteshvara. Its symbol is rosary. Its famous mantra is Om mani padme hum !

Akshobhya • Meaning: Immovable • Originates in east, from blue syllable hum हुं • Vajra family • Alphabets ca (palatal)- च, छ, ज, झ, ञ • Transformation of emotional defilement(*kleśa)*: Bewilderment(*moha*) • Vajraparyanka asana • Main Gods emanating: Huge number of gods, fearful ones, distorted face with bare fangs, protruding tongues, garlands of skulls etc. 1. Candarosana (secret worship) 2. Heruka-various forms, single and in yab-yum with various female deities 3. Hayagriva 4. Jambhala 5. Paramashava 6. Trailokayavijaya 7. Kalachakra • Main goddesses 1. Janguli 2. Vasudhara 3. Mahacinatara or Ugratara 4. Ekajata form of Tara • Gesture-Bhūmisparśa Mudrā • Throne-bearer-Elephant • Wisdom- Mirror-like • Corresponding Body Centre at Heart - Anahata cakra • Shape of Body centre- triangle	Blue	Māmakī. Embodiment of element water Seed syllable: blue *Mam*	Water/ Vijnāna (consciousness)	Hūm Om Akshobhaya Hum	Vajrapani Its symbol is Vajra. Usually represented as holding Vajra in his right hand standing with his legs crossed. Its mantra is Om Vajrapani hum!
Vairochana • Meaning: He who is radiant like the Sun. • Originates in centre from white syllable Om(ॐ) • Tathagata family • Alphabets ka (guttural)- क, ख, ग, घ, ङ. • Transformation of emotional defilement(kleśa): Aversion(dveśa) • Symbol: white discus • Vehicle: Dragon • 4 faces 8 hands • Single God emanating- 1. Namasangiti • Main goddesses: 1. Various forms of Marici 2. Vajravarahi 3. Cunda 4. Janguli • Gesture-Dharmachakra Mudrā • Throne-bearer-Lion • Wisdom-Dharamdhatu • Corresponding Body Centre at Crown- Sahasrara cakra • Shape of Body centre- Bindu(dot)	White	Locanā Embodiment of element earth Seed Syllable: white *Lam*	Akash/ Rūpa (form)	Om (ॐ) /Om Vairochana Om	Samantabhadra Usually holds a blue lotus(utpala) stem on which the family symbol of cakra or discus is shown. Its symbol is cintamani (magic jewel that ends all sorrow.). He, as emanation of Adi-Buddha is represented seated with the legs locked; without crown or ornaments, In his esoteric form, he is represented nude in blue color embracing his Shakti in white colour. Mantra is Om Samantbhadra Om

Amoghasiddhi • Meaning:Almighty, he who achieves the goal. • Originates in north, from green syllable kham खं • Karma family • Alphabets pa (labial)- प, फ, ब, भ, म • Transformation of emotional defilement(kleśa):Jealousy • (irśya) • Symbol: Double thunder, visvavajra • Vehicle:Garuda • Main Gods emanating 1. Vajraamrta • Main goddesses:- 1. Tara group esp. Shyama Tara 2. Mahamayuri 3. Other minor goddesses • Gesture-Abhaya Mudrā • Throne-bearer-Garuda • Wisdom-All-encompassing • Corresponding Body Centre at root- Muladhara cakra • Shape of Body centre- square	Green	Tārā Very popular in later Buddhism Embodiment of element air Seed Syllable: green *Tam*	Air/ Samskāra (Conformation)	āh (अः)/Om Amoghasiddhi āh hum	Visvapani or Karamsattva. In his right hand, he holds the *vishva,* a 5-colored double-sceptre, which symbolizes his deeper nature. He coordinate the wisdom and power of all 5 elements(dhatu). This enables him to eliminate all karmic bondages. His mantra is: Om āh karmasattva ha hum svaha.
Ratnasambhava • Meaning:The Jewel –born one • Originates in South from yellow syllable Tram त्रं • Ratna family • Alphabets ta (dental) त, थ, द, ध, न • Symbol: Ratna • Vehicle: pair of lions • Main Gods emanating 1. Jambhala 2. Ucchusma Jambhala • Main goddesses 1. Aparajita 2. Mahapratisara 3. Vajrayogini 4. Vajra Tara 5. Prasanna Tara • Gesture-Varada Mudrā • Throne-bearer-Horse • Wisdom-Equalizing • Corresponding Body Centre at navel - Manipur cakra • Shape of Body centre- Circle	Yellow	Ākāśadhātvīśvarī (ākāśa+ dhātu + īśvarī)	Earth/ Vedana (Sensation)	Tram (त्रं)/ Om ratnasambhava tram.	Ratanpani or Kshitigarbha Its mantra is Om ha ha ha vismaye Svāhā.

By the time, Kalacakra system originated, the number of Dhyani- Buddhas increased to six, to establish correspondence with the six-syllable (*shadakshari*) mantra, *Oṃ mani padme huṃ*, popularized by earlier studied Karandavyuha *sutra.* The sixth element added was the element of 'awareness'. The Kalacakra Tantra created later on a *Shadanga Yoga* in contrast to the *Ashtanga* yoga enunciated by Patanjali. These six classes were superimposed over a five-old extension to generate 30 different figures/deities. The elements become deities for an enlightened mind. Skandhas in pure state are the Dhyani- Buddhas, and the elements as their consort. This was the deification of ideas at its best.

The sixth element in its pure form became the sixth Dhyani Buddha of Kalacakra system, Vajrasattva. Vajrasattva originates from syllable *huṃ* and is white in color. He holds *vajra* and *ghanta* in his hands unlike other Dhyani Buddhas, he wears all ornaments, crown and a rich dress. It is also represented in single and *yuganaddha* form (*yab-yum*). Its Shakti is Vajrasattvatmika with *kartari* in right hand and *kapala* in the left. The Bodhisattva is *Ghantapani.* Worship is always performed in secret and initiation is needed in the cult. The great mantra used to purify mind mantra is -*Oṃ vajrasattva huṃ*!

The importance of the concept can be seen from its visual representations in most of the Buddhist monasteries where vajrayāna art has been preserved.

BUDDHIST ICONOGRAPHY IN INDIA

Snellgrove[9] observes that at Lamayuru monastery of Mang-gyu (5 to 6 miles from Alchi in Ladakh) and the one at Tabo in Spiti (Himachal Pradesh), the central cult is that of the Central Buddha Vairocana. This cult is represented textually by the Tantras and their commentaries in which Rinchen-bzang-po and his collaborators took special interest while formulating the Tantra section of the Tibetan Buddhist canon. The main image in the shrine at Lamayuru is a well preserved Vairocana, seated on a lion throne, with garuda and a pair of makara forming a canopy to his outer halo. The other four Dhyani Buddhas are seated against the back wall, two on the either side. The left wall has mural painting of eleven headed Avalokiteshvara and again a mandala of Vairocana. Similarly the main shrine room at Mang-gyu contains a central image of Vairocana with other four Dhyani Buddhas. On the walls, there are mandalas of Vairocana but they seem to have been repainted later as Mang-gyu is a living temple and has been renovated and repainted many a times. Nevertheless it is the eleven headed and thousand armed Avalokitesvara and unmistakable central position of the Vairocana image which stylistically and iconographically connects the site to both Lamayuru and Alchi.

The interior of the Sum-tsek , the three tiered temple at Alchi is dominated by three gigantic bodhisattva images representing Avalokitesvara, Maitreya and Manjusri, all three bodhisattvas, emanation of the Vairocana .The images also seem to be of the same inspiration as that of *Brihad Buddha* statues seen at Mulbek, Shey and ones destroyed at Bamiyan.

Another important deity and its various manifestations is Tara. She is the most popular goddesses in the Buddhist pantheon and has a parallel in brahmanical tradition too where she is worshipped as second Mahavidhya and seen as a form of Sati. Buddhists consider Tara to be the great mother goddess, the symbol of primordial female energy. Moreover she is considered as the consort of Avalokiteshvara, the symbol of the primordial male principle. A number of early representations of Tara either alone, in company of her consort or accompanied by other Buddhist deities have been found in the Buddhist cave temples of the Western Deccan(6^{th}-7^{th} CE). Exhibiting the ***varada*** or ***abhaya*** mudra and carrying lotus in the other hand, these images represent the earliest form of the Tara seen in Indian art .In the course of time, the multiplication of the forms of the goddess also generated multiplication of the number of her hands, and variations started to be seen in postures. Various wrathful forms emerged. These various forms are seen abundantly in the paintings and sculptures during 8^{th} -16^{th} C.E**.**

SAHAJAYANA AND THE COMPLEMENTARITY OF PARAMPARAS

Siddhas were well known in the literature of medieval Indian alchemy. Two main offshoots of Vajrayāna which have been popularized by the Mahasiddhas are, Kalachakrayāna and Sahajayāna

Kalachakrayāna	Sahajayāna
• The theory explained by Abhinavagupta as wheel of time and the process of keeping oneself above its vagaries • The possibility of controlling time(*kala*) possible by controlling vital winds in the nerves through yogic practices followed by the Siddhas	• Against the prescribed codes of study, discipline, conduct worship and ritual • Dohas and songs of Siddhas as the main source of inspiration…The whole gamut of thought rejects purely philosophical discussions and debates as useless. • Everything lies in human frame. The path denotes the easiest and most natural way(sahaja) by which human nature will itself lead the aspirant to the truth • Conception of an internal female force below the navel region of a male corresponding to 'kula-kundalini' Shakti of the non Buddhist Tantras, similar to the Natha tradition

In philosophy, the term *Sahaja* denotes the ultimate inner nature of beings and elements and in a spiritual sense, it denotes the easiest or the most natural way by which human nature itself can lead the aspirant to realize the truth. It believes that by suppressing desires and thereby straining the human body with the prescribed codes of study, discipline,

conduct, worship and ritual truth can never be found. It considers the human body itself as the seat of all human experience including that of ***Sahaja-Mahasukha***. According to the followers of Sahajayāna everything, every mystery, every answer lies in human frame; and the human body is in essence a microcosm of the universe. All their effort is channelised at realizing the wonders of one's own body and its immense power. The aim is to develop the hidden powers of mind which when properly harnessed can be more powerful than the material forces.

The interesting overlap between Buddhist Siddhacaryas, teachers of Kapalika sect and Nathas of Natha Sampradāya points at certain similarities between these highly esoteric cults. Many a *siddhas* are considered as Natha and also as Kapalika teacher. This exemplifies a common spiritual tradition followed by these great masters irrespective of the religion they followed or the religion with which they got associated. It throws light on the mutually inclusive nature of spiritual lineages*(parampara* or *gyud* in Tibetan) and religion in India. Interestingly Natha Siddhas consider the five main Nathas to be the emanations of Adinatha very much like five Dhyani Buddhas are treated as emanations of the Adi Buddha.

Buddhist Siddhacarya	**Natha**	**Kapalikas** (as per Shabaratantra)
Nagarjuna		Nagarjuna
Luipa or Luhipada	Matsyendranath	Minanath
Goraksa	Gorakhnath	Goraksa
Carpati	Carpatinatha	Carpata
Jaladharipa	Jalandharnatha	Jalandhara

All these three traditions lay a great emphasis on two major points:

- The imperative necessity of making the body sufficiently strong and fit before starting the Yogic practices
- Conception of an internal feminine force in the Nirmana cakra (cakra behind navel region) corresponding to that of *Kula-Kundilini* of non Buddhist tantras

The main aim of the Natha aspirants very much like a Sahajayāna aspirant is to feel within his own self the ideal of non-duality which is possible by the attainment of immortality and renovation of the body.[10] According to the Natha texts moon (soma) is the symbol of immortality (*amrita*) which resides in the Sahasrara or the crown region of the body. In a normal human being, this nectar drips from Soma and gets consumed by the fire of the sun which resides in the navel region through a serpent like channel. The face of this channel from where the *amrita* is dropped is designated as the tenth door. These adepts claim that once the tenth door gets closed , *amrita* can be saved in the body which ultimately leads to immortality. The feat can only be achieved through vigorous ***'KayaSadhana'*** or disciplining of the body.[11]These methods and processes of Hatha Yoga have been explained in detail by Briggs[12] in '*Gorakhnath and the Kanphata Yogis'* and are very similar to ones followed by the Siddhacaryas. Hence, it is the cult of body that connects all these three esoteric sects and stands in contrast with *Vijñānavādis* who believed in the primacy of consciousness. In a way, these sects are the carrier as well as the harbinger of materialist strand in Indian philosophy.

SUMMING UP

Tantra took centuries to come out of the closet and its history up to the era of the Siddhas can only be conjectural. In a recent lecture, Dr.Raffaele Torella suggested that Tantricism provided a break from the Absolutist Buddhist philosophy. Buddhists incorporated it in a big way in their belief system and soon came up with a complex system of Tantrik iconography. Dr. Torella sees this change as Tantricism coming out of the shackles of asceticism and entering a world of a householder and altering it for ever. The dry logic of the Epistemological schools of Buddhist philosophy was soon countered by this very dynamic and vibrant system of thought which focused on the body , the microcosm, as a medium for ultimate emancipation.

Whether the *Kapalikas*, or a similar sect of primitive Shaiva Tantra, or heretical Buddhist monks, formed the first lineage of Tantra is not known properly, but somewhere around 3rd -4th C.E., a need arose for order and consistency in the system, and this could only be achieved by committing to palm leaf manuscript what until then had been purely oral

transmission. The ***Manjusrimulakalpa*** contained a body of Mahayana lore and also the basic father-tantra mandala of the Five Dhyani Buddhas; but the ***Guhyasamaja-tantra*** is considered to be the first of the root-tantras describing yoga techniques as well as the mandalas, mantras and rites associated with the propitiation of a particular deity and his retinue, in this case ***Guhyasamaja.***

Bhattacharya interestingly observes "*while the master logicians like Shantideva, Dinnaga, Dharmakirti were devising hair splitting arguments to interpret the world as a void entity, how tantric ideas captured the heart of Buddhism through the back door makes a very interesting historical topic*"[13]

One has to see tantra and tantric knowledge as separate from religion and probably the tantric upheaval between 7th -12th C.E. was the final blossoming of the yoga of knowledge (*jñāna yoga*) which gave way to yoga of devotion (*bhakti yoga*) in medieval times. The ultimate tantric mystery is ***Mahamudra*** and according to Dowman,[14] the sexual analogy of lovers achieving a sense of complete oneness while still in their own separate bodies is probably the best if not the only image capable of expressing this paradoxical mystery. The mystic sadhanas devised by Siddhas were translated into a wonderful array of visual depictions and deciphering the same images without understanding the esoteric aspect and the reason for their visual resilience, can lead to erroneous results.

The essence of the teachings of Siddhas providing the impetus for creating the wonderful works of art and architecture along with popularizing a different and more worldly form of Buddhism. This could be done because siddha brought spiritual realization into everyday lives. Saraha composes the secret instructions of the Mahamudrā, *chintāmani* for the samsāra:

"In the primordially clear sky-like nature there is nothing whatsoever to abandon or attain. This is Mahamudra free of a mental activity that aims for results. This very mind that aspires for a result is really uncreate from the beginning. Thus there is nothing to be gained or discarded at all."

The sky-flower doctrine of obtuse Buddhist philosophers paved way for the grounded maxims of Siddhas. The dichotomy between Samsara and *Nirvana* was erased through the power of mystical outpourings of poetries:

"Live as a child lives,
the world is full of natural happiness,
dance sing and enjoy it.
Enjoy the pleasures of your senses
but don't be attached to them…
while drawing water, don't get wet."[15]

(*Saraha's maxim*)

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Management

NEW KEY TO EMPLOYEE RETENTION-INTRINSIC MOTIVATION: A STUDY OF PRIVATE BANKING SECTOR OF INDIA

Stuti Priyadarshni Nijhawan
****Dhruv Priyadarshni Nijhawan***

ABSTRACT

During the last few years, the private banking sector in India has seen tremendous growth and now is one of the important revenue generators in service sector. But with it the cases for employee dissent and dissatisfaction have witnessed a surge too at private banks in India. Despite providing hefty pay packages and comfortable working environment, the private banking sector is not able to withhold employees. The failures of employer-employee relations give rise to alarming attrition rates. Employee Retention is now the biggest challenge in front of private sector banks. The importance of humility at a leadership level cannot be overlooked as the aftermath of such a situation can result in an employee crisis. The purpose of this research paper is to understand the nature of intrinsic motivation which is now used at large to retain employees and to cut down the fast pace of employee turnover. For the purpose of this study, the technique of primary research has been used with a structured questionnaire and survey method. A sample set of 138 respondents from different hierarchy levels of private banks is used to understand the relative importance of intrinsic motivation for job satisfaction and employee retention.

Keywords: Attrition Rates, Employee Retention, Motivation, private sector banks.

INTRODUCTION

Banking in India has moved beyond accepting deposits and making loans, and has become a business, or a "financial supermarket," driven by market-based, profit oriented objectives (*Mohanty,* 2008: 116; *Uppal and Kaur,* 2006; *Vyas and Math*, 2006). The wider impact of Indian private banks has been through increasing competitiveness and customer orientation in the banking sector. The ability to offer a wide range of services with a high level of quality is becoming the most common scheme used by banks to satisfy their customers and enable them to win a niche in the sector surrounded by stiff competition, since in the eyes of banks, customers good quality services could contribute to their positive perception as well as ever lasting impression and image of the banks, resulting in the development of a sense of patronage (*Khan et al.,* 2010). It is, therefore, a challenge for management of private banks to motivate their employees in order that quality services are provided, and subsequently to satisfy the needs of their customers.

Nowadays, employee motivation is, therefore, used as a key factor to gauge the performance of a particular employee and an organization, a fact largely confirmed in the management, asserting that people are the most important organizational resource and the key to achieving high organizational performance.

***Stuti Priyadarshni Nijhawan** is a Research Scholar in Management from Subharti University, Meerut.E-mail: stuti.nijhawan@gmail.com.

** **Dhruv Priyadarshni Nijhawan** is a Senior Analyst at RocSearch India Private Limited.

INTRINSIC MOTIVATION

Motivation is a concept which was researched with relevance to work environment. The concept of motivation was described by differentiating this concept of motivation into two main types: intrinsic and extrinsic motivation. Intrinsic motivation means the inner drive of an individual which provides energy or force to an individual to work for better outcomes. The individual who is intrinsically motivated is more autonomous and work for better outcomes like creativity, performance, and involvement. Means intrinsic motivation enhanced by working for challenging tasks and positive outcomes were received (*Deci and Ryan*, 1985).

Intrinsic motivation refers to motivation that comes from inside an individual rather than from any external or outside rewards, such as money or grades. This motivation comes from the pleasure one gets from the task itself or from the sense of satisfaction in task. An individual is said to be intrinsically motivated if the basic reward for an activity is going to be an activity itself. *Deci*, (1975) and *Deci and Ryan,* (1985) also reveal that there were many external rewards which show their influence on the intrinsic motivation. In the Maslow scale, the higher level needs were linked with the psychological health or not with the money or monetary rewards (*Becchetti et al.*, 2012). In the human nature, no phenomenon clearly explains the impending and inclination of positive behavior as intrinsic motivation describes, it moves an individual from inside and gives energy for achieving the particular tasks. The construct of intrinsic motivation, the move towards the mastery, concern, adaptation and investigation and all these things are necessary for the development in the society. All these behaviors and needs do not require monetary rewards because all the employees also need satisfaction from their work or from their work environment irrespective of their pay-level. One more perspective was that employees sometimes refuse to perform particular task or work when their intrinsic motivation was low even if they get higher wages. Intrinsic motivation was related with the flow of the activity during the task in terms of involvement in the task and the relationships with the members (*Frey,* 1997; *Depedri et al.*, 2010). The truth is far more complex and while the cynical continue to believe in the overwhelming supremacy of money, in its power to buy happiness and satisfaction, but in personal life or the workplace, a number of management thinkers, social scientists and corporate managers feel otherwise, advocating and using distinctly different HR philosophies and policies.

It is an undeniable fact that the future of business enterprise depends upon the satisfaction level of its workforce. Dissatisfied workforces cause immediate problems only to their particular businesses. However, if these problems are left inadequately attended, these have a tendency to spiral out including other businesses, industries and regions harming relationships, productivity, profits and finally also the creation of national wealth. Employee satisfaction is thought to be one of the primary requirements of a well run organization and considered an imperative by all corporate managements.

STATEMENT OF THE PROBLEM

In today's fast paced world of hyper competition, globalization and constant change, the organizations can not remain as only profit seekers. These can no longer neglect massive problem at hand i.e providing job satisfaction to their employees. 'Money' used to be the single scale with regards to job satisfaction in past, but now the focus has changed to intrinsic factors of job satisfaction like long-term growth prospects, empowerment, empathy, employee engagement programs, mentoring and guidance etc. This change of focus is made to create a loyalty, sense of belongingness and to build self-esteem in employees working at banks in India. All organizations which are competent enough to identify this change can keep their employees satisfied and also retain their employees working in banks in India for long duration. Employee satisfaction is generally considered as the driver of the employee retention and employee productivity. Satisfied employees are a precondition for increasing productivity, responsiveness, quality, and customer service. (*Kaplan,*1996: 130)

This paper is an attempt to seek the intrinsic factors which are important for employees working in banks in India that provides the job satisfaction. Research has been conducted to understand which is the most important factor among these intrinsic factors of job satisfaction to employees working at banks in India.

CURRENT SCENARIO IN INDIA

One in four employees in the organized sector in India is set to switch jobs, the highest attrition rate globally, according to a Hay Group study. The series of fresh investments planned across sectors could raise demand for talent even as economic conditions remain tepid, raising concerns on employee engagement and retention. Employee turnover was predicted to rise to 26.9% in 2013 with an employee base of 3 crore compared with 26% in 2010 with an employee base of 2.8 crore , according to the study, '*Preparing for Take-Off*' (2013), conducted in association with the Centre for

Economics and Business Research. It covered 700 million employees in 19 countries. Worldwide attrition is predicted at 21.2% in 2013 on an employee base of 71.6 crore compared with 20.3% in 2010 on an employee base of 64.4 crore. The number of workers expected to take flight will reach 161.7 million in 2014 - a 12.9% increase compared with 2012 - as growth builds and employment opportunities increase, according to this study. Comparatively, turnover was minimal between 2010 and 2012. In the next five years, 49 million employees will leave their employers globally.

In India, sectors like infrastructure and banking - where new players are entering the field - will continue to suck in talent. In infrastructure, nearly $1 trillion of investment has been planned by the years 2018. With half of this expected from private financing, there will be huge demand for labor in India's finance, insurance, real estate and construction sectors - totaling 14% of employment in the organized sector - and raising turnover in these activities. This attrition rate is affecting private banks on large. HDFC bank's attrition rate of around 20 per cent is making its top management anxious. A study conducted by the Boston Consultancy Group shows that new private banks use front line sales staff on contract or on different terms resulting in a very high turnover with seven out of every ten employees quitting within a year. In the case of one private sector bank sales staff last only for a few months with a turnover of 180%.

The new generation private banks include the likes of ICICI Bank and HDFC Bank. Their branches have a relatively large proportion of their staff dedicated to sales. These include those involved in cross selling products of group companies such as mutual fund and insurance. According to the report, *'From five star to seven star in productivity'* prepared by Boston Consulting Group(BCG), banks are able to survive the attrition since the primary function of the high turnover staff is sales and they are not involved in operations. "*However, the employees interacting with customers during the sales process do not have a long term stake in the business. This creates a challenge in ensuring that proper promises are made to customers while soliciting business and that customers are on boarded well at the time of sale*" the report said.

The study seems to support this. Nearly 55% of Indian employees expressed concerns about the fairness of their compensation and the extent to which benefits meet their needs (48%). One in every three employees expressed concern over a lack of confidence in being able to achieve their career objectives with their current employers (37%); as a result, they are concerned about opportunities for learning and development (39%) and supervisory coaching for their development (36%).

Purpose of the Study

Current study will look at five different dimensions associated with Intrinsic Motivation. These dimensions include: career prospects, control, co-operation, employee engagement programs, and mentoring and guidance activities. Brief introduction to these factors are given below:

i. **Career prospects:** Under this intrinsic factor of job satisfaction, employees try to identify the long term growth prospects of the future advancement, success or development in the grade, status and position of the employees provided by the organization. This factor is important for employees as this provide chance to move forward and grow with the organization and it also focus on the opportunities which are available to the employees in the organization.

ii. **Control:** This is the intrinsic factor under which employees expect management to share information, rewards and power with employees so that they can take initiative and decisions to solve problems and improve service and performance. Empowerment in organizations is based on the idea of providing employees with skills, resources, authority, and opportunity, motivation as well holding them responsible and accountable for outcomes of their actions. This will contribute to their competence and satisfaction.

iii. **Co-operation:** The ability to appreciate the feelings of a subordinate in a particular situation is called empathy. It is the ability to mutually experience the thoughts, emotions, and direct experience of others. Employees want organizations to be empathetic towards their needs and problems.

iv. **Employee engagement programs:** Emotional connection an employee feels toward his or her employment organization, which tends to influence his or her behaviors and level of effort in work related activities. The more engagement an employee has with his or her company, the more effort they put forth. Employee engagement also involves the nature of the job itself such that if the employee feels mentally stimulated; the trust and communication between employees and management is strong; ability of an employee to see how their own work contributes to the overall company performance and results; the opportunity of growth within the organization; and the level of pride an employee has about working or being associated with the company. These

programs include managerial-employee discussions, outbound trips, occasional celebrations, external trainings, professional certifications etc.

v. **Mentoring and Guidance**: Employee training system under which a senior or more experienced individual (the mentor) is assigned to act as an advisor, counselor, or guide to a junior or trainee. The mentor is responsible for providing support and feedback to mentees.

The current study will add to the body of research in the area of employee retention world across by developing a more comprehensive view of the intrinsic motivation and its relative importance in the life of employees by accessing a database of employees working in private sector banks in India and using a five dimension survey associated with job satisfaction. The current study will strengthen and continue to fill the research gaps to help better understand the intrinsic motivation factors associated with job satisfaction, thus providing evidence to support effective business decisions with workforce planning.

RESEARCH OBJECTIVES

1. To study Intrinsic motivation factors like providing job satisfaction to the employees working in Private Banks in India.
2. To identify the most important intrinsic motivation factor ranked by the employees.
3. To recommend / suggest ways for improving job performance of employees.

RESEARCH METHODOLOGY

The study is descriptive in nature and seeks to identify the intrinsic motivational factors which are important for the employees working in private sector banks in India. The main purpose of the study is to identify the most important intrinsic motivational factor for the employee retention in these private sector banks so as to reduce the current storm of employee turnover in private banks in India.

SCOPE OF THE RESEARCH

The scope of this research is limited to employees working in private sector banks in India

SAMPLE SIZE

The sample size was 138 respondents working in different private sector banks in India.

COLLECTION OF DATA

This study is based on survey method with primary data collection on the five dimensions of intrinsic factors of job satisfaction namely career prospects, control, co-operation, employee engagement programs, mentoring and guidance activities. A suitably framed questionnaire was prepared in this regard to identify the most important intrinsic motivational factor among the factors mentioned above. ***The employees were asked to rank the above mentioned five factors from 1 to 5, giving rank 1 to the factor they believe is most important and 5 to the least important.***

FRAMEWORK OF ANALYSIS

Data collected is presented in tabular form and analysis has been done using simple percentage and mean score. **Multiple Factor Rank Method** has been adopted to check the most important intrinsic factor of job satisfaction for the employees working in various banks in India.

Table 1 - Analysis of Intrinsic Motivation factors ranked by Multiple Factor Rank Method

INTRINSIC FACTORS	RANK							
Career Prospect		**1**	**2**	**3**	**4**	**5**	**Total**	**Average Ranking**
	%	**50**	**17.39**	**10.87**	**4.35**	**17.39**		**3.78**
	Number	**69**	**24**	**15**	**12**	**24**	**138**	
Control	**%**	**17.39**	**28.26**	**23.91**	**23.91**	**6.52**		**3.26**
	Number	**24**	**39**	**33**	**33**	**9**	**138**	
Mentoring and Guidance	**%**	**6.52**	**30.43**	**30.43**	**23.91**	**8.70**		**3.02**
	Number	**9**	**42**	**42**	**33**	**12**	**138**	
Co-operation	**%**	**8.70**	**10.87**	**21.74**	**19.57**	**39.13**		**2.30**
	Number	**12**	**15**	**30**	**27**	**54**	**138**	
Employee Engagement And Development Activities	**%**	**17.39**	**13.04**	**13.04**	**28.26**	**28.26**		
	Number	**24**	**18**	**18**	**39**	**39**	**138**	**2.63**

FINDINGS OF THE RESEARCH:

Table 1 shows the findings of the study:

- The most important intrinsic motivation factor ranked by the employees working in private sector banks in India is the **career prospects**. By analyzing the first column, we can see that many people have also voted for **control** and employee engagement as their first preference.
- This is closely followed by need for **control**. People have a basic tendency to want to control what happens to them. So they want control at workplace also.
- Mentoring and guidance is also quite important as per the rank given by employees.
- Employee engagement and development activities is the fourth most important intrinsic factor of job satisfaction under study.
- Co-operation is ranked at number five i.e. the least important intrinsic factor for job satisfaction by employees working in banks in India.

CONCLUSION

Organizational productivity and success depends to a large extent on employee motivation and perception towards his or her work profile. Intrinsic motivation is related to internal satisfaction of a person which he or she derives from working with a particular company. The above stated factors of study are some of the most compelling reasons that lead people to quit in search of a more empowering and fulfilling work place. In such a situation, the management needs to take a frequent check on its leadership style and personality.

Through this study we have been able to understand the relevance of various intrinsic motivational factors. We

would like to conclude this study with some specific and some general recommendations for the various factors under observation.

Recommendations

- The private banks should provide more challenges and career opportunities to their employees to retain them. One in every three employees expressed concern over lack of confidence in being able to achieve their career objectives with their current employers (37 per cent).
- Training and development programmes must be provided to the employees at regular intervals to update their knowledge and skills.
- The kind of work given to employees should be according to his/her abilities and knowledge and their efforts for doing a particular task must be valued by giving appreciations and rewards to the employees for their hard work so that their level of motivation increases. Indian employees expressed concerns about the fairness of their compensation and the extent to which benefits meet their needs.
- Along with healthy environment, healthy relationship should also be maintained in an organization.
- The bank should provide certain benefits to their employees, so that they can perform well to achieve organizational goals.
- The job should be interesting enough, so that it must create enthusiasm among the employees.
- Enough freedom must be given to the employees to take important decisions.

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Management

CORPORATE SOCIAL RESPONSIBILITY: CASE OF TCS

Jinnia*

ABSTRACT

This paper examines how the companies view, and conduct their CSR, and identify key CSR practices. Corporate Social Responsibility (CSR) is viewed as a comprehensive set of policies and programmes that are integrated into business operations, supply chains and decision-making processes throughout the company. The paper deals with CSR initiatives of an Indian IT major-Tata Consultancy Services Ltd.(TCS) against GRI standards. This paper will be useful in deeper understanding about shortcomings and opportunities that CSR practices of various companies offer and need for improvement, if any. The study suggests nurturing people and planet through active involvement of employee volunteering activities. Helping local communities and NGO through CSR activities is more than mere philanthropy.

Keywords: Community, Corporate Social Responsibility (CSR), e-waste management, Indicators, sustainability, water harvesting.

INTRODUCTION

Awareness of the impact of business on society and environment has grown along with the increasing socio-regulatory pressures. This evolution has gradually led business to return the displaced social orientation. Many firms are assuming increased responsibility for both social and environmental well- being. Corporate response to environmental and social issues is progressing through three stages of evolution: profit maximization management, trusteeship management, and quality of life management (*Hay and Gray*, 1977). The business depends on society for its existence, sustenance and encouragement. Being too much dependent on society, business has definite responsibility towards different segments of society. Though profit making is one of the main objectives of business, but it has to satisfy its various stakeholders, viz., employees, consumers, government, community, and shareholders. Over the past few decades, a growing number of companies have recognized the business benefits of Corporate Social Responsibility (CSR) policies and practices.

WHAT IS CSR?

CSR is defined as "*A concept of shareholder, employee, environment, community, government all related to Business"*. Companies integrate social and environment concerns in their business operations and in their interaction with their stakeholders on a voluntary basis, as they are increasingly aware that responsible behavior leads to sustainable business success. (*Commission of the European Communities,* 2002). A growing body of empirical studies demonstrates that CSR has a positive impact on business economic performance. Companies going for CSR activities have experienced a range of bottom line benefits, namely, improved financial performance and reduced operating costs (*Agarwal,* 2008), enhanced brand image and reputation (*Agarwal,* 2008), increased sales and customer loyalty (*Creyer and William*, 1997). In Indian context, CSR is not a new concept and can be easily seen in the form of magnificent temples, high mosques, large *dharamshalas* and great educational institutions (*Agarwal,* 2008).

***Jinnia** is a Research Scholar at Mewar University, Gangrar, Chittorgarh, Rajasthan.

In 2007 Indian Prime Minister, Manmohan Singh stated that:

"Corporate social responsibility must not be defined by tax planning strategies alone. Rather, it should be defined within the framework of a corporate philosophy which factors the needs of the community and the regions in which a corporate entity functions. This is part of our cultural heritage. Mahatma Gandhi called it trusteeship….I invite corporate India to be a partner in making ours a more humane and just society… We need a new Partnership for Inclusive Growth based on what I describe as a Ten Point Social Charter..first, we need to have healthy respect for your workers and invest in their welfare…" .

The increasing relevance of CSR in India has stemmed from the fact that a business cannot succeed by ignoring the human and social needs of our society. In this age of widespread communication and growing emphasis on transparency, customers of any product or service are not likely to feel satisfied in buying from a company that violates the expectations of ethical and socially responsible behavior. Therefore, the companies that pay genuine attention to the principles of socially responsible behavior are favored by the public and preferred for their goods and services (*Sarkar*, 2005).

COMPANY PROFILE:

Governance

Being a part of the 144-year old Tata group, which epitomizes sustainability, the TCS, have inherited a strong legacy of fair, transparent and ethical governance, as embodied in the Tata Code of Conduct. This is aligned with the ten principles articulated in the UN Global Compact to which TCS is a signatory. The Tata group's Tata Business Excellence Model (TBEM) embodies sustainability as a key aspect for measuring business excellence for group companies, and the results of this are highlighted at the board level. TCS is on the Steering and Working Committees of the Climate Change Group within Tata Quality Management Services (TQMS), which drives sustainability guidelines for the group.

The CEO oversees the company's sustainability strategy and reports on the initiatives and progress at the board meetings. A Sustainability Council has been set up to oversee the implementation of sustainability strategy. The council is led by the head of corporate sustainability and reports to the CEO&MD and the Board of Directors. It comprises the heads of internal IT, HSE, Administration, CSR, Infrastructure Planning Department, Eco-sustainability Services and Human Resources. The goals are determined by the senior management in line with the company's overall sustainability objectives and the performance against these goals.

The Company's initiatives in the community aim to create impact through empowerment so that the people in the community can make a better living and lead a better quality of life. The Company has chosen four areas to focus its energies on namely, Education and Skill Development, Health, Environment and Affirmative Action. Programmes undertaken under these four broad areas are aimed at economically backward and other marginalized groups (like women, children and aged) as well as those who are physically or socially disadvantaged.

The Company's community initiatives are delivered using four different approaches:

(i) Leveraging the Company's core competencies in technology

(ii) Creating conditions for employee participation through volunteering

(iii) Building synergistic partnerships with clients and other partners like NGOs

(iv) Financial sponsorships

TCS' SUSTAINABILITY INITIATIVES

TCS is an organization of more than 250,000 employees and hence infrastructure, facilities, and associates have a large impact on the society and environment. TCS aim to run operations in a socially and environmentally sustainable manner. Therefore, the Company aims to build "greener infrastructure."

TCS' CSR programmes are "*Impact through Empowerment*." TCS has a diverse range of global CSR initiatives in the areas of education, health and environment: volunteering, funding and pro bono leveraging of IT capabilities.

CSR in Education Sector and Skill Building

TCS' *Adult Literacy Programme* (ALP) is among the first instances of use of IT Core Competence for social causes, since 2000, and continues to be a flagship programme of TCS CSR. Since its inception in 2000, the ALP has reached

1,93,625 beneficiaries. In FY 13, the ALP helped in making 11,125 people literate. During the year, in partnerships with NGOs and academic institutions, 473 trainers were capacity built to conduct ALP programmes in Telugu, Hindi, Urdu, Odiya and Marathi. Another programme, Computer-*based Functional Literacy* (CBFL) programme helps teach illiterate adults how to read and write. The literacy software was enhanced to support writing and numeracy in four additional local languages (Bengali, Oriya, Marathi, and Tamil). A total of nine languages are now covered under CBFL. TCS collaborated with Directorate of Adult Education under *Saakshar Bharat Scheme* to run camps in eight languages in India. More than 11,100 adults were made literate using the CBFL software.The Project "Udaan", is a joint and novel initiative by National Skill Development Corporation (NSDC) - Government of India and Special Industry Initiative to help Kashmiri youth join the mainstream of corporate India. Through Project "Udaan", TCS endeavors to catalyze the Kashmiri youth connect with Indian industry, coupled with polishing their skills thus making them more employable. TCS has partnered with NSDC in this promising initiative and is the first organization in India to sign the MOU with NSDC. "*Empower"* is another CSR initiative, which provides training of TCS support staff in basic computer skills and spoken English knowledge as well as soft skills. *Empower* was expanded from Lucknow to Pune & New Delhi. 131 candidates were trained under this programme.The pogramme *InSight*, address school children to develop their communication skills and giving them an exposure to IT Industry.

TCS Maitree, the volunteering arm of TCS is working to deploy a sustainable model to improve education, healthcare and the environment within 5 villages across India. For example, in Panvel India, TCS associates through the Women Empowerment Programme trained 45 women, screen-printing to enhance their livelihood options. 570 children in the village are benefitting through the provision of an infrastructure for clean drinking water at the primary school. Under *mKrishi ,* farmer's knowledge about their crops is enhanced and solutions provided to their problems over mobile phones.The Company also organizes training for visually impaired candidates to improve their employability in IT/ITES industry. TCS has developed a Faculty Development Programme focusing on ITI Instructors of the COPA (Computer Operator cum Programming Assistant) course which will improve the quality of training in the courses run by these instructors. Then, there is TCS Research Scholar Scheme supporting students who wish to pursue PhD in India.

CSR in the area of Health

The primary programmes launched by the TCS are as follow**:**

1. An integrated Hospital Management System along with IT infrastructure including a comprehensive and fully integrated, web-based solution has been provided free of cost to the Cancer Institute at Chennai. FY 13 marked the successful implementation of all 17 modules of Med Mantra which were then transitioned to a support mode.
2. *Tata Medical Center* (TMC) has its systems and workflows aided by a comprehensive customized Hospital Management System, developed and running on a state of art IT infrastructure designed and implemented by TCS. In FY 13, TCS provided TMC with pro bono IT services valued at INR 4.2 crores.
3. The *CSR Tech Team* provides to end consultancy and architected comprehensive solutions for social organizations. The focus has been on using technology as a key enabler to assist and resolve business challenges faced by these organizations.
4. *Retina India Foundation* is an NGO focused on patient care for visually challenged (retina related) persons in India. TCS has prepared the prototype for a National Retina Disease Registry System.
5. *Justice and Care* is an international NGO supporting victims of trafficking. A prototype for the Case Management System for monitoring trafficking cases and collaterals to assist the management team in visualizing the Case Management System has been prepared.
6. *Operation Smile* is an international NGO which provides free surgery for cleft lips, cleft palates and other facial deformities to economically backward children. TCS prepared a prototype for Patient Care System for tracking patients, with visual collaterals.
7. *Impact India Foundation* focuses on reducing disabilities affecting a population of 1.5 million marginalized people through curative and preventive measures. TCS customized and deployed a Donor Management System addressing Impact's donor management needs and prepared a process document for their Community Health Initiative programme. This document has been showcased to the Health Minister of India and has been sent to the Office of the Prime Minister of India.
8. *CHILDLINE India Foundation* works to ensure children's rights and the protection of children. In FY 13, TCS

customized and deployed a Donor Management System addressing Childline's Donor Management needs.

9. Creating awareness – HIV and AIDS awareness programmes were conducted by TCS officials who have formed *Club RED* to drive this initiative.
10. Blood donation camps – These camps are organized regularly across the delivery centers in India and a similar drive was organized in Singapore in association with Red Cross.

CSR in the area of Environment

The primary programmes launched by the TCS in this sector are as follow:

1. Enhancing awareness – Organizing different events to enhance awareness.
2. Reduction of carbon footprint and waste within the organization by following *Reduce, Reuse and Recycle* themes.
3. TCS released 1,428 Turtle hatchlings along five coastal villages in Maharashtra through the marine turtle conservation programme in 2013. In addition, TCS continues to support 270 plant species belonging to 160 genera and 70 families and nurture 117 animal species represented by butterflies, amphibians, reptiles, birds & mammals across our offices.
4. TCS completed the campaign to protect endangered tree species *Adansonia digitata* (Baobab Tree) from woodborer infestation at Yantra Park,Pune.

ENVIRONMENTAL PERFORMANCE:

With a strong focus on energy efficiency, green infrastructure and green IT, TCS strive towards reducing specific energy and carbon footprint. TCS continue to maintain focus on water efficiency and reducing demand on fresh water through wastewater treatment and closed loop recycling. Effective waste management aligned to the 3R principle, TCS aspire to become zero waste discharge at all their campuses. These features are an integral part of their green campuses which are designed as per LEED Green Building Standards. Compliance to all relevant environmental laws, acts, rules and guidelines is monitored on an ongoing basis across all TCS sites. 77 TCS locations are certified for Environment Management System (EMS) under ISO 14001:2004 with an ongoing commitment to bring additional software development centers under scope of certification.

Rainwater Harvesting: In order to achieve water sustainability, various efforts are made & implemented by TCS in its owned premises and in leased premises wherever feasible. The rain water harvesting structure is an important feature of building design in the form of roof top collection system, recharging to bore wells, construction of recharge trenches, recharging pits, and water bodies for storing rain water.

Waste Management

Being an IT services and consulting organization, there are no significant primary emissions or process wastes. Wastes include electronic and electrical waste (E-waste) and a small proportion of regulated wastes like lead-acid batteries, waste lube oil, etc. The waste management practices seek to reduce the environmental impact of waste streams to the extent possible by reduction in generation, segregation at source and proper management to achieve the ultimate goal (long-term target) of <5% waste to landfill.

At TCS, environmental initiatives are seen as part of the overall operational and infrastructure improvement and the expenditure is not tracked separately. Capital expenditures like green building projects or operating expenditures like monitoring and measurement costs, investment in energy efficiency projects, compliance fees are included as a part of the operational budget for the facility.

ENHANCING EMPLOYABILITY AND TO CREATE EMPLOYMENT

TCS engage with associates creating environmental awareness and sensitizing them towards nature and conserving its various resources. The training methodologies used range from induction training to continuous learning to awareness mailers to various campaigns and competitions on environment. The total training man- hours imparted on health, safety and environment was over 240,000. We also have an ecology club under the employee engagement forum *Maitree,* where associates come together and engage in various activities like clean-up drives, awareness sessions, road-shows, tree plantations drives, sapling distribution, etc.

Some of the days observed include World Earth Day (April 2012), World Bio-diversity Day (May 2012), World Environment Week (June 2012), Green Consumer Day (September 2012), World Wildlife Week (October 2012), Pollution Control Day (December 2012), Energy Conservation Day (December 2012), World Water Day (March 2012), Earth hour campaign (March 2012).

Global TCS' Initiatives

Some of the initiatives include the following:

Table 1

Region	**Sustainable Community Initiatives**
India	Adult Literacy Programs University Alliances TCS' BPO Employability Program Academic Interface Program mKRISHI WebHealth Center Mansuki TCS Maitree village development initiative TCS Maitree's Advanced Computer Training Center Med Mantra InsighT Empower CSR Technical Team's support to social organizations
North America	First Book Club goIT
UK and Europe	Passport to Employability UK School Partnerships Stepney Football Club Today is a Good Day
Asia Pacific	InsighT- Australia SINDA Computer Training Go for IT! Library Program in China Operation Smile
Latin America	Environment Leaders
Middle East and Africa	Landmark computer training Scholarships at CIDA City Campus City Ambassadors Football Club Support to Reach for Dreams

Source: TCS Homepage at http://www.tcs.com/about/corp_responsibility/corporate-social-responsibility/Pages/default.aspx

As part of the Tata culture of being a responsible corporate citizen, TCS continuously strive to reduce our ecological footprint by identifying material areas and focusing on each of them strategically. TCS have defined processes and systems in order to identify, quantify and reduce the impacts on the environment, including the carbon, water, energy and

waste footprint. The key pillars of the successful environment management have been senior management commitment and an integrated management systems approach guided by the TCS Environmental Policy. From green buildings to green IT to green supply chain, their commitment is to grow sustainably and also help customers achieve sustainable growth through green solutions and service offerings.

Awards and Recognitions:

Key awards and accolades received by TCS in the Year 2011-12 across the three pillars (Sustainable Operations, Corporate Social Responsibility, and Solutions for our Customers) are listed below:

- Ranked #1 in the Carbon Disclosure Leadership Index 2011;
- Ranked World's 7th Greenest Company in Newsweek's Green Rankings Global 500 List;
- "Platinum +" Status globally in the Corporate Responsibility Index 2011 in an external review carried out by BiTC;
- Achieved the BBBEE (Broad-Based Black Economic Empowerment) level 2 certification by the Government of South Africa;
- "Platinum Label" in Low-carbon Office Operations Program (LOOP) from World Wildlife Fund for TCS Hong Kong;
- Highly commended at the Coffey International Awards in the Community Awards for Excellence in Category for Adult Literacy Programme;
- Certificate of Appreciation' from the American Red Cross for TCS' support to relief efforts in Japan after the March 2011 earthquake and tsunami;
- TCS Yantra Park, Thane, India awarded first prize in Safety, Health and Environment (SHE) initiative in the 'Service Sector' category, conducted by Confederation of Indian Industry for the year 2010-11;
- Won IDG's InfoWorld 2011 Green 15 Award for TCS' PowerIT initiative;
- "Energy Conservation Award 2011" for Lowest Carbon Footprint in the large IT & ITES Company category by the Centre for Sustainable Development and Integrated Green Ventures;
- Certificate for Remarkable Performance from ICC Environment Excellence Award 2012 for Kalinga Park, Bhubaneshwar;
- CII 12th National Award for Excellence in Energy Management 2011 for TCS Seruseri, Chennai;
- 2nd prize in CII WR Safety, Health and Environment (SHE) Award 2011 to TCS Kensington, Powai, Mumbai;
- Special Jury Award 2012 of ITs AP Green Company Award 2012 to Deccan Park, & Synergy Park, Hyderabad;
- Garden Award 2011 from The Mysore Horticulture Society - Lalbagh Bangalore to TCS L-Center, Office Bangalore;
- Greenest Office Award for TCS Hungary in 2011.

The case study of TCS show that the good governance is constituted by transparency, fairness and accountability to stakeholders. The managements of well-governed organizations understand that they are mere trustees managing the affairs of the company in the best interests of the 'true' owners – the shareholders. The Tata group's Tata Business Excellence Model (TBEM), Steering and Working Committees of the Climate Change Group within Tata Quality Management Services (TQMS), which drives sustainability guidelines for the group.

Obviously, this calls for greater symmetry of information between them and their stakeholders. It logically follows then that consistently practicing the best disclosure and reporting practices is simply a way of life in organizations with good governance.The true test of good governance and risk management structures is their ability to withstand the vicissitudes of economic and business cycles.

Employees will think twice before joining companies which do not have good governance practices. Customers will shy away from companies which do not follow the rules, society will not respect companies which do not follow the best practices. It will not be an exaggeration to say that the value of a company in future will be decided by the governance system of a company.

CONCLUSION

Governance will become the key to sustainability in business.At the end of the day, building a large corporation is easy but building one of the most respected corporations in the world and sustaining it over many years is a big challenge. Only those companies that were built on a platform of strong corporate governance will earn respect from its stakeholders and enjoy a more sustainable growth.Hence TCS has chosen the following channels to drive its CSR initiatives:

- Developing innovative solutions to address large-scale societal problems by utilizing IT core competence;
- Volunteering for projects that address the felt need of communities in which TCS operates, while aligning with the core themes of TCS' CSR;
- Participating in community development program championed by our clients;
- Partnering with select non-government and civil society organizations and other government bodies;
- Supporting large-scale causes such as disaster relief or any other cause as determined by the Corporate CSR Council.

The sustainability report by TCS is according to the Global Reporting Initiative for sustainability reporting which is based on inclusivity, materiality& responsiveness. TCS has specific goals and targets against health, safety & environment aspect of performance. The work is performed in compliance with requirement of IPAC code of ethics for professional accounts. This illustrates as an example for the other company to go for these standards and GRI guideline .Audit through KPMG can be done so that impartiality can be maintained. KPMG has systems and processes in place to monitor compliance with the code and to prevent conflict regarding independence.

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Energy Sector

LED REVOLUTION AND CONSERVATION OF ENERGY IN INDIA

T.K.Chattopadhyay*

ABSTRACT

In a developing country like India, there is increasing demand of more energy for the developments in all sectors on one side while, the need for conservation of energy on the other. It is acknowledged that India needs to conserve its energy in order to manage the demand and supply gap to facilitate the growth rate in future. It is also recognized that the huge consumption of energy needs to be managed in terms of saving, controlling pilferage, optimum utilization, load distributions and meeting the necessity of the consumers. Lighting alone consumes 18% of the total energy produced. This sector is significant to look at for the sake of conservation of energy. In future, Lighting Emitting Diode (LED) will be the most important light source that would illuminate India on a large scale.

Keywords: Heat Sink, Light Emitting Diode (*LED*), Power quality, semiconductor.

INTRODUCTION

In a developing country like India, the production of power generation is equally important to the maintenance of quality of power. This is extremely necessary to ensure the sustainability and to keep up the development in a positive direction. If the quality of the power is not standardized and consistent, the consumers at the end would be the worst hit. Power is consumed in various applications and the average life of the instruments being run on electricity is quite short if the power quality is not standard. With more and more electronic devices in use, the need to control the power quality has become very important. This issue needs to be given prior attentions by both the Government and the industries for the benefit of both as the quality of power is not up to the mark in India. The key driver of Indian Government policy is the need to enhance the energy efficiency across all sectors. Optimists in India peg the achievement of growth rate at 8-9% and to achieve same, three to four fold primary energy production needs to be ensured by the year 2031-2032. This is the scale of energy production that is required to eradicate poverty and enhance the living standard of the average citizen of India.

POWER QUALITY-DOWNWARD PLUNGE?

There are various factors which are responsible for the low power quality such as Voltage Sag, Voltage Swell, Transient, Harmonics, Voltage Unbalance, Frequency Deviations, Flicker and inrush Current. These factors have had a significant impact on the Lighting industry for a long time. Keeping in line with the intention of conservation of energy in Lighting industry, the most modern technology that are being established is Light Emitting Diode (LED) which is being implemented across the country in the coming decades. LED is semiconductor and is electronic in nature and hence the quality of power is the important factor to ensure the life span of LED lighting in all its applications.

***T.K.Chattopadhyay** is a Research Scholar at Mewar University, Gangrar, Chittorgarh, and Rajasthan. He is also a General Manager with the Indian Society of Lighting Engineers.

In India, the power supply in high voltage mains has a range from 110 to 230 volts. This wide range has fluctuations having smaller and larger values but in case of LED, it requires consistent DC current in forward direction to remain operational in safe, effective mode. This will also make the devices last long.

The fluctuation of current damages the LED chips and the device with LED chips start degrading. Therefore, the first management needs to be done on the DRIVER which is an electronic circuit which converts input power into a current source and the current remains consistent in spite of fluctuation, over voltage and voltage spikes. The power current is directly responsible for the light output from the device and therefore the Driver needs utmost attention with all kinds of care in order to make the LED a success

In the recent past, LED has emerged as the forerunner in this evolution not only in India but globally. In India, LED has been the most discussed subject in economizing power usage because of the following reasons:

- The upsurge of the semiconductor industry in India;.
- The development of the electronics industry in India;.
- Power savings are to the tune of 50-60%;
- The LED system is almost maintenance free;
- New technology and provides clean energy;

To accelerate the process, the Indian Government has developed policies to stimulate the adoption of LED Lighting in the country, and is funding a number of pilots *LED* street-lighting projects.

LED- REVOLUTION

LED product making is an easy phenomenon. The LED chips are supplied by the chip manufacturers, heat sink by heat sink manufacturers, power supply by power supply manufacturers and the balance assembly can be done in a small workshop (factory). The product is connected with electricity which will endure 12-14 years of life and ensure a huge conservation of energy. Most of the products required to make LED light were sourced from China, but now there are large number of LED companies operating in Indian lighting domain. Earlier Indian Government as well as lighting experts promoted the continuous imports from China, Taiwan and Korea without considering the quality of power, climate, environments and the expertise.

Let us understand what LED lighting system is:

- LED lighting products are not a single product but a combination of Light source (chip), Heat Sink, Driver, Controller and in some cases "Lenses."
- Each component has a different function to contribute to make a perfect LED product be it in indoor or outdoor application.
- Each function needs to be properly organized in accordance with the time span to maximize the lifespan of LED light as they are all interdependent and one's failure does not stand in the way of other's success. This is the most critical area to look at, as far as India is concerned.
- The chip manufacturers claim the life span of the LED chip as 50000 burning hours. If the device operates 8 hours each day, the light should last for 12 years.

Let us examine the function of each component and the availability in India.

LED Light Source (Chip): The power LED chips are manufactured by a few companies in the world like Philips, Osram, Cree, Nichia, Samsung and Seoul Semiconductor.

Heat Sink: As LED H-P junction generates heat, it needs to decapitate. Heat sinks are made of metal alloy and mainly manufactured in South Korea and Taiwan. These are being marketed in the Indian market through representative companies. Few Indian companies have started manufacturing the luminaires as per the demand design specifications.

Driver: This ensures the consistent forward current supply to chip and being manufactured in India. But the electronic driver manufacturers are very few in numbers.

Controller: This controls the lumen/watt of the device. Few international companies have started their manufacturing operations in India.

Optics or Lenses: This is necessary to distribute the light to cover more area as LED light is directional in nature. The quality lenses are not manufactured in India and being 100% imported.

The picture of LED manufacturing in India is given in **Table 1.**

Table 1: Status of LED Technology in India

Technology	Under trial
Climate	Under testing
Skilled R&D	Not available
Retrofit	No
Manufacturing	Partial, mainly assembly
Replacement	No
Specifications	yes
Standards	Only 6 national standards are available
Standard of Power Quality	Not available

In the 12th Five year plan, the power generation capacity in India is targeted to reach close to 1000 GWatt against the present capacity of 225 GWatt and the Lighting industry is expected to conserve energy to 15% from the 18% consumption. In such scenario, there are large numbers of management initiatives which can be listed as follows:

MANAGEMENT INITIATIVE

1. **Standards of Power Quality**: In many developing nations, the production of power gets the prime importance to meet the demand rather than to provide power quality and India is no exception. To ensure power quality and to minimize the pitfalls the Bureau of Indian Standard (BIS), the national body for the standardization must bring out a national affordable Indian standard in consultation with the IEC and the IEEE. In this exercise, the stake holders would be the Government bodies, Power generation companies, Power distribution companies, Power Grids and major industry consumers. After the formation of the standards there would be a mandatory mechanism of implementation and periodic controls across the nation. BIS the highest body for the specifications and standards in India is engaged to formulate the new standards for LED lights and luminaries as per the suitability of Indian climatic conditions. The specifications will ensure standard practice in manufacturing the products and in turn gain the customer confidence through proper testing. This exercise would result in a major conservation of energy.
2. **Power Engineers:** Ministry of Education should formulate a national strategy to install the Power engineering courses in the engineering institutions across the country because to implement the standards , India would need a huge number of Power Engineers who will explore topics related to the generation, distribution, transmission, and storage of electrical power. This work can include the design of new systems as well as evaluations of existing grids and equipment to determine when they will need upgrades and what kinds of upgrades may be necessary. Power engineers can act as safety inspectors/watch dog to check on conditions at working power supply in exterior and interior building lights, recessed lights, flag pole and sculpture lights, pole lighting in streets, parking lot and pedestrian lighting, electrical and security systems, parking structure electrical systems and including lighting etc.
3. **Driver**: The driver plays an important role in the life span of a LED lighting device and most of the incidence of failure is due to the inefficient quality of driver. In the LED products domain, there is no dearth of technology, chip, heat sink and optic but drivers needs to be designed to suit the Indian conditions and make it capable of ensuring the LED product life cycle.
4. **Establishment of Testing Laboratory**: Initiatives are to be taken by the private and Government to establish modern testing facilities across the country to ensure the correct testing data and hence certification.

CONCLUSION

Success of management of conservation of Energy in the perspective of Lighting industry can be measured only through appropriate improvement in the power quality and the power supply to the LED products with the help of qualified Power engineers. If these corrective steps are taken, the country will take a giant leap forward towards the conservation of energy through LED revolution road map in the coming years.

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Fluid Dynamics

PRESSURE DROP AND HEAT TRANSFER TO POWER LAW FLUIDS ACROSS STAGGERED TUBE BANKS

M.K. Goel*
Dr. S.N.Gupta**

ABSTRACT

The heat transfer rates and pressure drop data available in the literature for the flow of water and power law non-Newtonian fluid flowing across staggered triangular tube bank are analyzed using capillary tube bundle approach. Correlations for predicting friction factor and heat transfer are proposed and compared with those based on parallel channel model.

Keywords: Heat Transfer, Nusselt number, pseudoshear rate, Reynolds number, tortusoity factor..

INTRODUCTION

Non-Newtonian fluids are encountered in number of process industries; and shell and tube heat exchangers are often used for heating and cooling of these rheologically complex fluids. In the absence of the required ideal tube bank data for these fluids, it is extremely difficult to use modem heat exchanger design techniques. The designs, therefore, are usually based on some reasonable guess made for non-Newtonian fluids derived from Newtonian correlations and curves.

Most of the earlier attempts to correlate the friction factor or heat transfer coefficients and Reynolds number for Newtonian fluids are based on conventional model employing an equivalent diameter and the maximum velocity of the minimum fluid area. *Grimison*[1] *Huge*[2] and *Pierson*[3] correlated their experimental heat transfer data using outside diameter and the maximum velocity in dimensionless groups. *Bergelin* et al.[4, 5 & 6] used volumetric mean diameter to correlate their data in laminar and turbulent range and proposed separate correlations for triangular, staggered square and in line tube arrangements. *Zukauskas*[7] presented an extensive survey of the then available information on Newtonian fluids and recommended correlations for different tube arrangements. *Hughmark*[8] and *Whitaker*[9 &11] successfully predicted heat transfer and pressure drop during flow across pipes or beds of particles in packed or expanded state by assuming the bed to be consisting of a large number of capillary tubes having diameters equals to hydraulic diameter of the bed.

Cruzan[10] and *Adams* and *Bell*[12] reported pressure drop and heat transfer data using aqueous CMC solutions. They used outside tube diameter, maximum velocity and Reed *Metzner Reynolds number*[13] to correlate their data and proposed separate correlations for tube banks of different geometries. Prakash et al.[17] investigated pressure drop and heat transfer with water and aqueous CMC solutions flowing across triangular tube bank. A parallel-plate channel model was used to define the flow in the tube bank and a single valued correlation was proposed for both Newtonian and power law non-Newtonian fluids. *V.K. Mandhani* et al.[18] numerically investigated the heat transfer characteristics for incompressible, steady and Newtonian fluid flow for a bundle of circular cylinders and compared their prediction with that of experimental results of *Bergelin*[6] and that of Le-Clair and Hamielec. Numerical investigation was carried out by *Narasimha Mangadoddy* et al.[19]

***M.K. Goel** is a faculty at Department of Mechanical Engineering, HI-TECH Institute of Engineering & Technology, Ghaziabad (U.P.). E-mail: goel.madan67@gmail.com

**** Dr. S.N.Gupta** is the Director General of HI-TECH Institute of Engineering & Technology, Ghaziabad (U.P.)

for forced convective heat transfer characteristics for incompressible power-law fluid past a bundle of circular cylinders and found reasonable agreement of their prediction with the experimental results of *Adams* and *Bell*[12]. *Khan* et al.[20] analytically investigated heat transfer from tube bank in cross-flow under isothermal boundary condition and compared heat transfer results for inline and staggered tube bank. They found higher heat transfer rate for staggered arrangement than that for the inline arrangement. This paper analyses and presents correlations in the light of the capillary tube bundle model.

1. OBJECTIVE

The experimental data have been used to predict the performance of cross-flow tube bank using capillary flow model and also converging-diverging parallel plate channel model. In the capillary flow model approach, the flow across tube bank is considered to be equivalent to that through a collection of tangled capillaries, where capillaries are assumed to be uniform but of non-circular cross-section.

The same experimental data are used to predict the performance of same tube bank using converging-diverging parallel plate channel model to account for the effect of fluid contraction between two adjacent tubes and expansion elsewhere. In this model the flow pattern is assumed to follow a sinusoidal path in the direction of flow and Reynolds number calculation is based on the equivalent diameter and average velocity.

The results obtained from both the above models are compared to obtain better design criterion with a view to explore the possibility of better, unique and more realistic approach.

2. RESEARCH METHODOLOGY

The capillary flow model has already been used by Hughmark (8) and Whitaker (9) for correlating the Newtonian fluid flow and heat transfer data for staggered tube banks. This can be extended for non-Newtonian fluids as well. The flow situation may be considered analogous to a bundle of large number of tortuous capillary tubes of varying cross section with a mean hydraulic radius rH. Defining hydraulic radius as ratio of flow area to wetted perimeter one gets,

$$r_H = \frac{D_o \varepsilon}{4(1-\varepsilon)} \qquad (1)$$

where ε is the void fraction.

The equivalent length Le of tortuous path of the fluid stream, which includes the length of tube bundle and equivalent length due to contraction and expansion and secondary flows, is a function of the actual tube bundle length. It can be represented by $L_e = \beta L$ where β may be termed as tortuous path factor defined as the ratio of equivalent length of tortuous flow stream to actual length of the bank. The parameter β would be equal to π/2 for staggered arrangements and unity for inline arrangements where tube contraction and expansion losses are negligible.

Using those basic concepts, analysis of flow of a power law fluid through capillary tube bundle of hydraulic diameter D_e gives the relationship between wall shear and pseudoshear rate as follows:

$$\tau_w = k\left(\frac{8U}{De}\right)^n = r_H\left(\frac{\Delta P}{Le}\right) = r_H\left(\frac{\Delta P}{\beta L}\right) \qquad (2)$$

$$K' = k\left(\frac{3n+1}{4n}\right) \qquad (3)$$

Defining friction factor as $f_m = \frac{2\tau_w}{\rho U^2}$ (4)

Substituting the value of τ_w, r_H and $\frac{U_s}{\varepsilon}$ in the above equation we get,

$$f_m = \frac{\Delta p\, g_c}{2\rho U_s^2}\,\frac{D_o}{\beta L}\,\frac{\varepsilon^3}{(1-\varepsilon)} \qquad (5)$$

The Reynolds number may now be defined as

$$Re_m = \frac{D_e U s \rho}{\mu} \qquad (6)$$

$$= \frac{D_o U s}{(1-\varepsilon)\left(\frac{\tau_w}{k'}\right)^{\frac{n-1}{n}}} \qquad (7)$$

where, $\mu_{eff} = k'(\tau_w k')^{\frac{n-1}{n}}$ (8)

3. DATA ANALYSIS

The experimental data were from the Ph.D thesis of *Om Prakash*[17]. Om Prakash carried out experimental work on tube bank having 110 copper tubes of 0.95 cm outside diameter arranged on a triangular pitch, 1.43 cm, in eleven longitudinal rows. The test fluids which flowed past the tubes were water and aqueous CMC solutions. Flow characteristic of fluids were determined with the help of capillary viscometer and flow behavior index, n, and consistency index, K, of the fluids were evaluated from pseudoshear plots. Flow behavior indices were reported by authors are 0.73, 0.64, 0.56, 0.77 and 0.61 for 1%, 1.5%, 2%, 3% and 4% CMC solutions respectively.

The overall heat transfer coefficient (Uo) has been calculated from heat balance. The outside heat transfer coefficient for the test fluid (ho) flowing outside the tube bank was calculated using overall and individual resistance evaluating the inside heat transfer coefficient (hi) using Nusselt relation[14] for turbulent flow heat transfer in the entrance region of a tube.

$$\frac{h_i D_i}{K_i} = 0.36\, R_e^{0.8}\, P_r^{0.33} \left(\frac{D_i}{L_e}\right) \text{ for } 10 < L/D_i < 400 \qquad (9)$$

and

$$N_u\, \Delta^{-1/3} = f\left[R_e^{C_1}\, P_r^{C_2} \left(\frac{\mu_{eff}}{\mu_w}\right)^{C_3}\right] \qquad (10)$$

where

$$Nu = \frac{h_o D_o \epsilon}{K(1-\epsilon)} \qquad (11)$$

$$P_r = \frac{C_p\, \mu_{eff}}{K} \qquad (12)$$

$$\Delta = \frac{3n+1}{4n} \qquad (13)$$

For the used data, ratios of effective viscosity at the tube wall and bulk temperature conditions were found to be near unity. *Prandtl numbers* were calculated at bulk fluid temperatures. The exponent on *Prandtl number* is taken as $\frac{1}{3}$ in accordance with boundary layer theory.

The data of *Om Prakash et al.* with those of *Adams* **(15)** and *Bergelin et al.* **(4,5 & 6)** are shown in **Figure.1** where, $Nu\, Pr^{1/3}\, \Delta^{-1/3} \left(\frac{1-\varepsilon}{\varepsilon}\right)$ values are plotted against Re_m. For the data included in **Figure.1**, the Reynolds number varies from 0.2 to 0.4, flow behavior index from 0.5 to 1.0, and $\frac{P}{Do}$ from 1.25 to 1.50. All the data points fall almost along a single curve. The regression analysis of the data gives,

$$Nu\, Pr^{1/3}\, \Delta^{-1/3} \left(\frac{1-\varepsilon}{\varepsilon}\right) = 1.5 + 0.25\, Re_m^{2/3}$$

The above equation correlates the data of *Om Prakash* et al, [17], data of *Adams* [15] and that of *Bergelin* et al *4,5&6* with mean deviation of ± 12.5%.

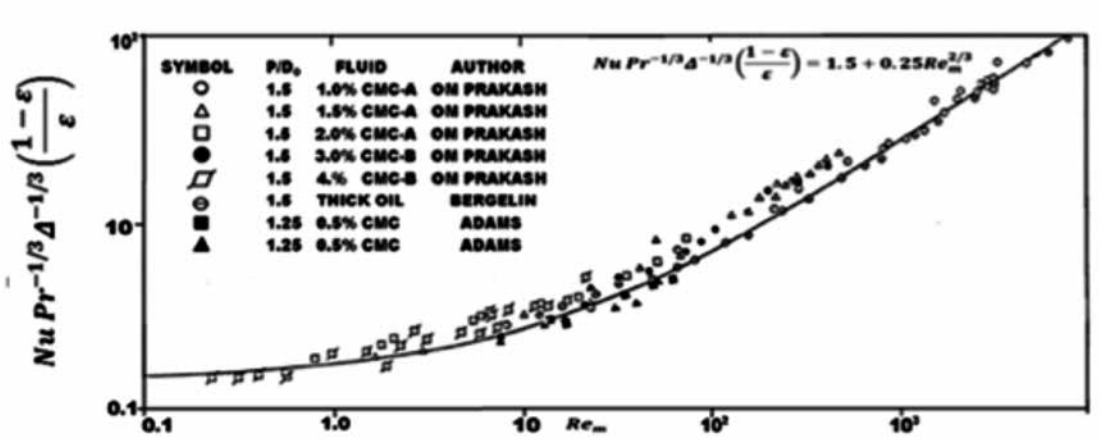

FIG.1 PLOT OF $Nu\, Pr^{-1/3}\Delta^{-1/3}\left(\frac{1-\varepsilon}{\varepsilon}\right)$ Vs REYNOLDS NUMBER FOR TRIANGULAR TUBE ARRANGEMENT (CAPILLARY TUBE MODEL)

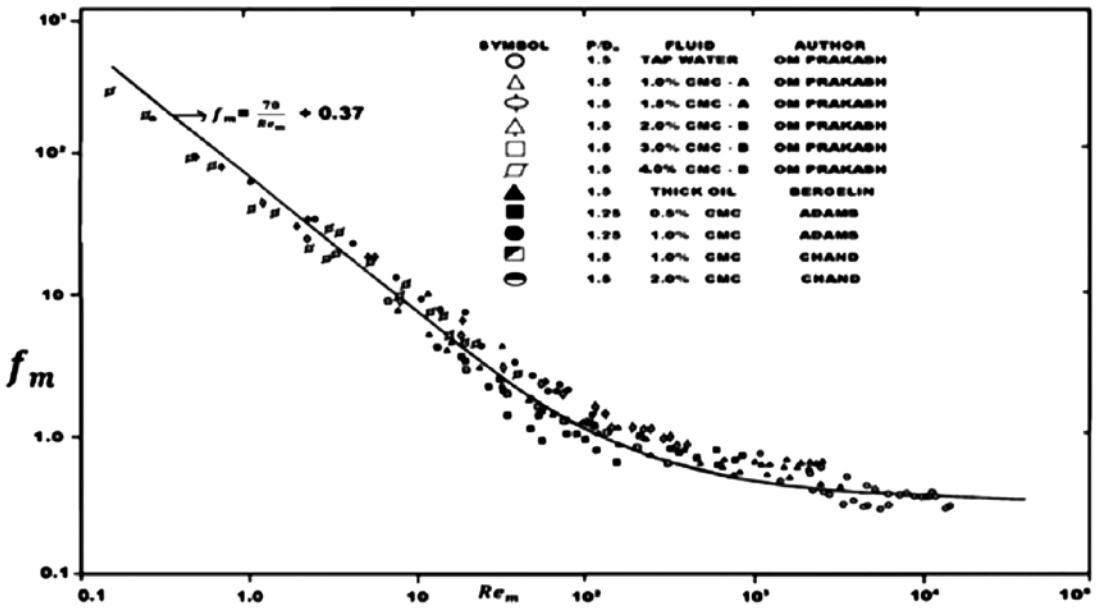

FIG.2 PLOT OF FRICTION FACTOR Vs REYNOLDS NUMBER FOR TRIANGULAR TUBE ARRANGEMENT (CAPILLARY TUBE MODEL)

Figture.2 shows a plot of friction factor versus Reynolds number for triangular tube arrangements having P/D_o = 1.25 and 1.5. At low Reynolds number, f_m is seen to vary as $(Re_m)^{-1}$.

The slope of the curve gradually decreases with increasing Reynolds numbers. Considering the contribution of both, the viscous and form resistance to pressure drop, the data can be correlated by the following equation,

fm = (70/Re¬m)+0.37

which correlates the data of Om Prakash et al. [17] and those of Adams [15], Bergelin et al. [4,5&6] and Chand [16] with mean deviation of ± 25%

Comparison with parallel plate channel model

The correlations for heat transfer and friction factor based on parallel plate channel for triangular tube arrangements were reported by *Prakash* et al. (**Fig.3 to 5**). These are compared with equations obtained based on capillary tube bundle model.

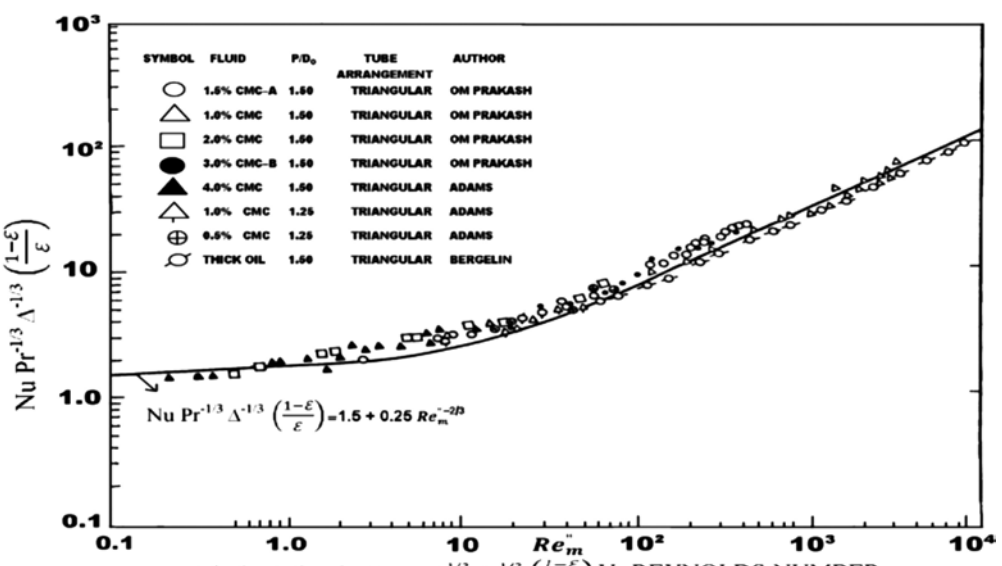

Fig.3 PLOT OF $Nu\ Pr^{-1/3}\ \Delta^{-1/3}\left(\frac{1-\varepsilon}{\varepsilon}\right)$ Vs REYNOLDS NUMBER

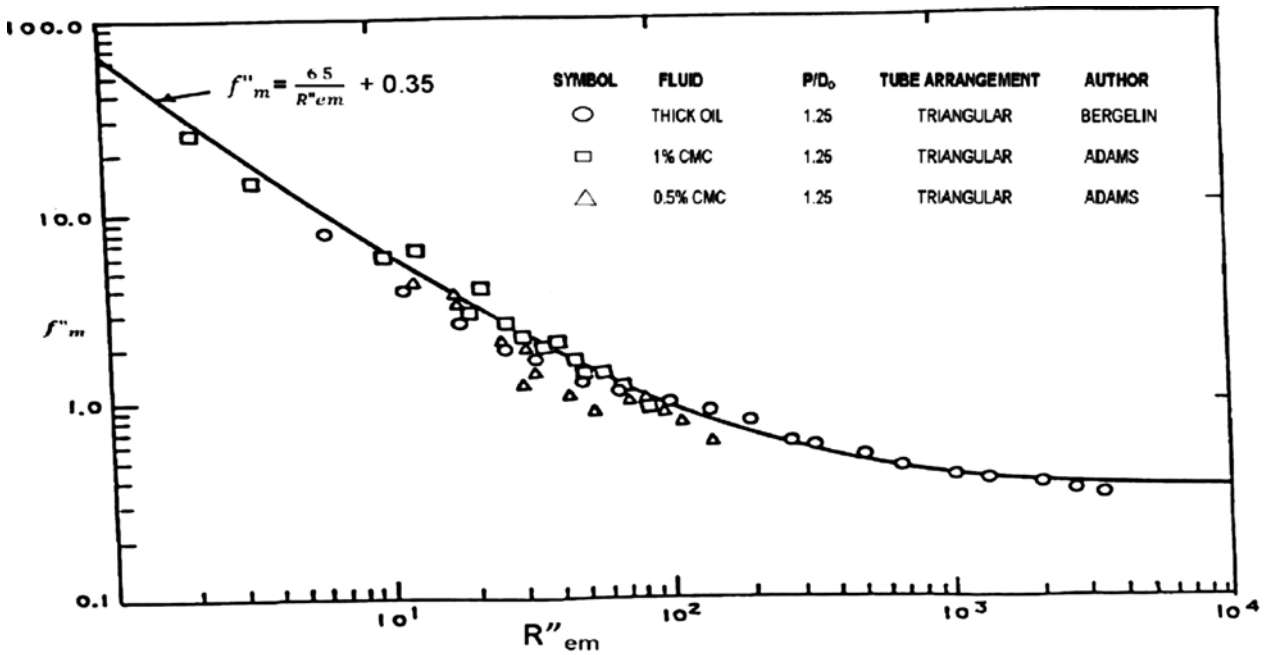

FIG.4 PLOT OF FRICTION FACTOR Vs REYNOLDS NUMBER

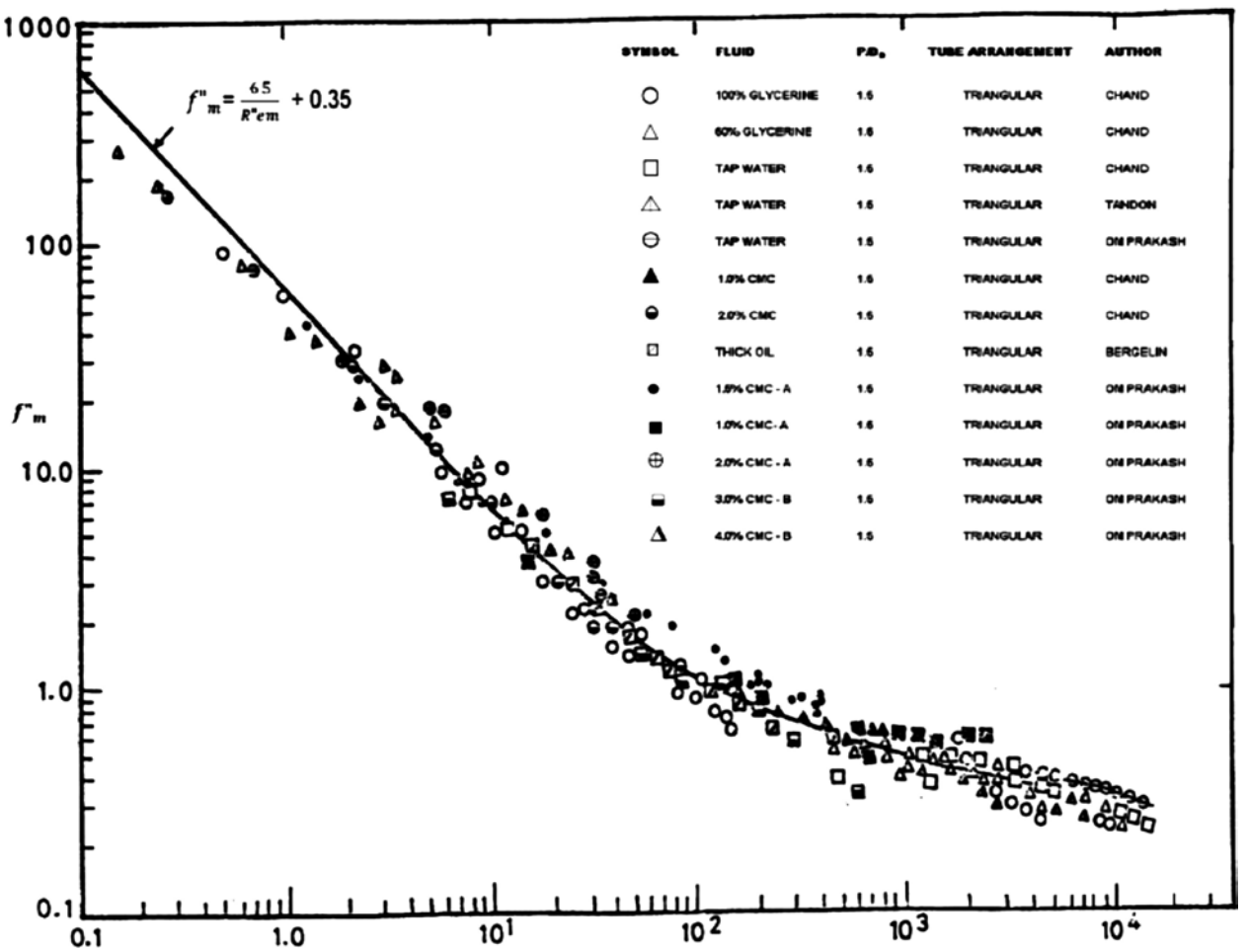

FIG.5 PLOT OF FRICTION FACTOR VERSUS REYNOLDS NUMBER

The equations based on parallel plate channel model gives lower deviations (±6%) for heat transfer and ±14.0% for pressure drop respectively than those based upon capillary tube model. 3. Conclusions

$f_m = \frac{16\beta\beta_f}{Rem}$ for capillary tube bundle model and

$f_m = \frac{24\beta\beta_f}{Rem}$ for parallel plate channel model

where $\beta = \pi/2$ for triangular tube arrangements and

β_f = form factor

The values of form factor (β_f) were found as 2.787 and 1.725 for capillary tube bundle and parallel plate channel model respectively. Thus the form factor in the case of capillary tube bundle model is 1.616 times more than the parallel plate channel model. The parameter β_f is form factor which accounts for form resistance and is the main cause of increase in drag.

A bank of tube can be represented either by a set of capillary tube bundle or by a set of parallel plate channels having hydraulic diameter equal to volumetric hydraulic diameter of the tube bank. Use of dimensionless numbers Nu, Pr and Re defined on the basis of both the approaches gives single valued correlation for both Newtonian and power law non-Newtonian fluids. However, the correlation based on parallel plate channel approach is found to be better than that of the capillary tube bundle approach.

4. Acknowledgement

I take this opportunity to express my most sincere feeling of gratitude to HI-Tech Institute of Engineering and Technology, Ghaziabad for providing the facilities and financial help for the fabrication of experimental setup and computational work. I am extremely grateful to Dr. Om Prakash for permitting me to use data from his Ph.D theses for completion of this work.

D_e hydraulic diameter of tube bank $\frac{D_o\epsilon}{1-\epsilon}$, m.

D_i inside tube diameter, m

D_o outside tube diameter, m

f_m friction factor based on capillary tube model

$(D\ \Delta p\ g_c\ \epsilon^3)/2\rho\ U_i^2\ (1-\epsilon)$

f'_m friction factor based on parallel plate channel model

$(D\ \Delta p\ g_c\ \epsilon^3)/2\rho\ U_i^2\ (1-\epsilon)$

h_i heat transfer coefficient of the fluid flowing inside the tube, w/m^2 °K

h_o heat transfer coefficient of fluid flowing outside the tube w/m^2 °K

K thermal conductivity w / m K

K' power law consistency constant based on capillary tube bundle model

K, $(3n+1)/4n$, Kg/m Sec^{2-n}

K" power law consistency constant based on parallel plate channel model

K $(2n+1)/3n$, Kg/m Sec^{2-n}

L length of the tube bank, m

n flow behavior index

$\tilde{Nu}$ Nusselt number

Δp differential pressure drop, N/m^2

Re_m Reynolds number based on capillary bundle tube model

$$D_o \, U_s \, \rho \, / \, K' \, (\tau_w / K')^{\frac{n-1}{n}} \, (1-\varepsilon)$$

$Re_{m''}$ Reynolds number based on parallel plate channel model

$$D_o \, U_s \, \rho / K'' \, (\tau_w / K'')^{\frac{n-1}{n}} \, (1-\epsilon)$$

H hydraulic radius of tube bank $\frac{D_o \epsilon}{4(1-\epsilon)}$

U average velocity, m/s

U_s superficial velocity, m/s

β tortusoity factor

Δ $(\frac{3n+1}{4n})$ for capillary tube bundle model

Δ $\frac{2n+1}{3n}$ for parallel plate channel model

ϵ void fraction

ρ density, Kg/m^3

τ_w shear stress at wall, N/m^2

μ_w viscosity at wall temperature, Ns/m^2

μ_{eff} effective viscosity based on capillary tube model,

$$K' \, (\tau_w / K')^{\frac{n-1}{n}}, \; Ns/m^2$$

μ_{eff} effective viscosity based on parallel plate tube model,

$$K'' \, (\tau_w / K'')^{\frac{n-1}{n}}, \quad Ns/m^2$$

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Medical Science

UTI DIAGNOSIS: A COMPUTATIONAL APPROACH

Tariq Rasool*
S.M.K Quadri**
Farooq Iqbal****

ABSTRACT

Urinary tract infections are the most common type of infections affecting the urino-genital tract of human beings. Although most of the times urinary tract infections are not life threatening but if not diagnosed and treated well in time, can lead to severe complications. UTIs should not be difficult to diagnose but at times symptoms of some other diseases of Urino-Genital tract overlap with the symptoms of UTIs to a greater extent. This overlapping makes the diagnosis challenging and chances of misdiagnosis increase considerably particularly in case of junior physicians. In this paper, we explore the applicability of a modified version of K-Nearest Neighbor technique from the field of data mining to diagnose UTIs on the basis of clinical symptoms presented in a health care facility.

Keywords: UTI, Urino-genital, Data Mining, K-NN.

INTRODUCTION

According to an estimate UTI burden accounts for as many as seven million out-patient department visits and 100,000 hospitalizations. Of all nosocomial infections UTI alone accounts for 35% and is the second largest cause of bacterimia in hospitalized patients [1]. A major chunk of the work load in clinical microbiological laboratories is contributed by UTI [2].Clinical diagnosis of UTI is challenging as most of the times the clinical symptoms on presentation overlap with other diseases to a considerable degree. Clinical diagnosis of diseases on the basis of symptoms and clinical examination requires extraction of relevant clinical leads and discovering hidden connections in the physiological change patterns on the part of a Clinician. This task of clinical diagnosis becomes challenging as the symptoms of various diseases most of the times overlap to a larger extent. With the advent and exponential growth in the knowledge base of mathematical and computational sciences, researchers have applied tools and techniques from these fields to healthcare and medical sciences in order to have a deeper understanding of medical phenomena and attempt to solve real world health problems.

Data mining is concerned with digging deep into large data sets in order to find hidden and previously unknown connections, relationships in data patterns and hence data mining results in knowledge discovery. Researchers have applied the tools and techniques from the field of data mining to a wide range of disciplines such as financial forecasting, analysis of organic compounds, weather forecasting and healthcare [3]. Data mining in medical sciences is a relatively new and upcoming field. Medical data mining aims at solving clinical problems of diagnosis and treatment [4]. Previously tools and techniques from data mining have been used in diagnosis of heart diseases [5], diabetes [6], stroke [7] and cancer [8].One of the most widely used techniques from data mining for classification problems is the K-Nearest Neighbor approach[9].

***Tariq Rasool** is a Research Scholar, Mewar University, Gangrar, Chittorgarh,Rajasthan.

****M.K Quadri** is Faculty at the Department of Computer Sciences, University of Kashmir.

*****Farooq Iqbal**, MD is a Physician Specialist based in Bangalore, Karnataka.

MATERIALS AND METHODS

Study setting

This retrospective study was conducted using the medical records from the W.C medical center, a super-specialty nephrology hospital in Kashmir.

Study design

Medical records of randomly selected 130 patients who were treated at WC Medical center, a super specialty nephrology health care facility from Jan 2010 to June 2012 were perused. After going through their medical records in consultation with a resident doctor, it was found that after clinical examination 80 patients had been diagnosed and treated for UTI, whereas the rest of the study population had overlapping symptoms with UTI, however their laboratory investigations had excluded UTI. In consultation with the resident doctor, a set of classical cardinal symptoms of UTI was prepared and appropriate weight was given to every individual clinical symptom. This weighted set of clinical symptoms constituted our data set and it was used to design the UTI partition of our knowledge-base. The set of clinical symptoms of the rest 50 patients constituted the non-UTI partition of our knowledge-base.

Modified K-Nearest Neighbor Algorithm

The following algorithm was used to design our knowledge-base, logically separated into several separate classes to predict the classification of a new sample vector into one of the two partitions (UTI, Non-UTI). It works as under:

Step1. Design a knowledge base 'Z' partitioned into well defined 'N' classes,

Where,

$$Z = \bigcup_{i=1}^{n} X_i \quad [n >= 2]$$

And

$$\bigcap_{i=1}^{n} X_i = \Phi \quad \text{Where, } Xi = x[j];\ j = \{1 \ldots m\}$$

Step2. Input=Y[q],

Where, $q = \{1 \ldots r\}$

Step3. Calculate K–nearest neighbors of Y using Euclidean distance between vectors

$$d(x_{ij,}\, y_q) = \sqrt{\sum^{n}_{i=1}(x_{ij\,,}\, y_q)^2}$$

Step4. Determine $C(y) = f\,(d\,(x_{ij,}\, y_q))$

Step5. Return $C(y) = X_i \quad 1 <= i <= n$

The algorithm works by mapping the input symptom vector to one of the two possible partitions (either the UTI partition or the non-UTI partition) of our knowledge base.

RESULTS

In addition to the derivation vector set (consisting of 130 patients), an additional set of 50 vectors containing clinical symptoms from the medical record department was prepared. Out of these fifty, 35 had been confirmed as having UTI and treated for the same and 15 had overlapping symptoms with UTI but investigations had revealed some other diseases. This constituted our validation vector set.

Out of this combined test vector set (115 UTI vectors +65 Non-UTI vectors) our technique correctly identified 102 patients as having UTI (out of the UTI vector set) and out of the 65 who did not have UTI, correctly categorized 53 in the Non-UTI class. These results indicated a sensitivity of 88.7%, specificity of 81.54% and an overall accuracy of 86.11% (**Table** 2).

CONCLUSION

This paper stresses on the need to utilize tools and techniques from the field of computational sciences in order to understand and better diagnose various disease conditions. While it is imperative to mention that the technological advances are no replacement for trained clinicians, however this study demonstrated that computational techniques can serve as a valuable tool to clinicians in general, and junior physicians in particular.

Table 1: Clinical Symptoms

Lower Abdominal pain
Hematuria
Dysuria
Frequency
Fever
Flank Pain
Vaginal irritation
Vaginal discharge
Back pain
Costovertebral Angle Tenderness
Dipstick Urinalysis

Table 2: Performance evaluation

Sensitivity	Specificity	Accuracy
88.7%	81.54%	86.11%

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Library Science

E-LEARNING IN LIBRARY OF JAMIA HAMDARD UNIVERSITY

Kirtika Bhatli*

ABSTRACT

The paper is study of E-learning system in Jamia Hamdard University, Hamdard Nagar Delhi. The objectives of the library are to provide excess to information to the faculty, post graduate students, under graduate students and research workers of various universities. The library has maximized usage of computers and also built up networks for E- Learning.

Keywords: Jamia Hamdard University(JHU),HMSCL Hakeem Mohammed Said Central Library, Library service.

INTRODUCTION

The history of Jamia Hamdard begins with the establishment of a small Unani clinic in the year 1906 by Hakeem Hafiz Abdul Majeed, one of the well-known practitioners of Unani System of Medicine of his time. Hakeem Hafiz Abdul Majeed had a vision of making the practice of Unani Medicine into a scientific discipline so that Unani medicines could be dispensed in a more efficacious manner to patients. He gave the name "*Hamdard*" to his venture which means "sympathy for all and sharing of pain". His illustrious son, Hakeem Abdul Hameed, carried forward the philosophy and objectives of Hamdard in independent India. Even at the time of partition of India in 1947, Hakeem Abdul Hameed was dreaming of setting up a complex of educational institutions which would concentrate on highlighting the contribution of Islam and Islamic culture to Indian civilization and development of Unani medicine for curing diseases.

HAKEEM MOHAMMED SAID CENTRAL LIBRARY

University Library is one of the oldest institutions of Jamia Hamdard. It was established in 1960 with a small beginning as a library attached to Hamdard Dawakhana(Wakf). The Library was moved to new campus of the erstwhile Institute of History of Medicine and Medical Research. The Library of Indian Institute of Islamic Studies was shifted in 1977. After the establishment of the Hamdard University in 1989, all collections were merged to constitute the Central Library of the university.

University Library system consists of six faculty libraries and one Central Library. The Central Library is named as Hakim Mohammad Said (HMS) Central Library. It is located in erstwhile Institute of Islamic Studies building. Five faculty libraries- F/o Science library, F/o Medicine library, F/o Nursing library, F/o Pharmacy library and F/o Medical & Allied Health Sciences library are located in their respective buildings. F/o Islamic Studies library is located on the first Floor of Central Library building. There are eight faculties in Jamia Hamdard. Each faculty has its own faculty library, except Faculty of Management Studies and Information Technology(MSIT),and Faculty of Inter-Disciplinary Studies.

*Kirtika Bhatli is a Research Scholar at Mewar University, Gangrar, Chittorgarh, Rajasthan.
E-mail: kirtikabhatli@ymail.com

Presently, the Central Library fulfils the requirements of these two faculties.

The library has more than 1.75 lakhs items including 30,000 rare books, and 18,500 back sets of journals. Library subscribes to foreign and Indian journals. It has acquired quite a large number of CDs, micro-films, micro-fiche and more than 4000 manuscripts in Urdu, Arabic and Persian languages. The Library system has been automated and networked. It has installed computer terminals on all the floors of the Central Library. All the teaching and non-teaching staff and students of the university are issued barcoded membership cards. They are now borrowing/returning books on automated mode. For accessing **Online Public Access Catalogue(OPAC)** computer terminals have been installed on all the floors. Students are using this facility and are being benefitted immensely.

Scope of the study: The present study is limited to the users of JHU, and its E- Resources library and other computerized library and information services provided to its users.

Methodology: The following two methodologies have been adopted to analyze the project report :

- Questionnaire
- Personal Interview Method

LIBRARY RULES

1. WORKING HOURS

- The Library remain open on all working days from 9.00 am to 5pm.
- The Text Book Section of the Central Library normally remain open till 12 midnight during academic session. Timings for Saturday, Sunday and holidays are be 9am to 5pm.,which may be extended as per directive of the competent authority.
- The Loan Counter is closed half an hour before the closing of the Library.

2. MEMBERSHIP

The following are entitled to enroll themselves as members:

- Students of the University;
- Teaching, non-teaching , academic and library staff of the university;
- Special members.

Following Tables provide the details of membership, category-wise and the resource material available with the Library:

Table 1: Total Library Staff (2012-2013)

Post	**Number**
Librarian	1
Asst.Librarian	2
Sr. Prof. Asst.	8
Jr.Prof.Asst.	5
Library Attendent	12
Book Binder	1
Others	2
Total	31

Table 2:Total Collections (2012-2013)

Item	Number
Books	1190796
Journals	135
PhD. Thesis	400
CD-ROM	23

Table3 : Annual Budget (2012-2013)

Item	Amount (in Lakh Rs.)
Books	2
Journals	40
Non Book Material	20
Equipments/Contingencies and Others	20

Table 4: **Membership (2012-2013)**

Category	Number
Faculty	400
Research Scholars	800
P.G & U.G Students	32,800
Administrative Staff	600
Supporting Staff	100
Total	34,700

Software Using : LIBSYS 4

Storage Medium being used by the users: CD-ROM, Pen drive, DVD

Library Services provided for E-Learning:

Reference Service, Referral Service, Bibliographic Index, Reprography, Seminar /Workshop, Display Programmer, Lecture Programmer, Newspaper Clipping and A/V Services.

Details of E-Resources:

E-Database/E-Journal/OnlineAccess/E-Mail/24-Hours

Internet/Instant/Messaging/OPAC/CD-ROM/Microform/ILL.

Digital Information Centre:

Library Communicates following resources to its users:

- **Online Reference sources:** General Encyclopedia, Technical Encyclopedia, Encyclopedia Britannica, Scholarpedia, MathWorld, Stanford Encyclopedia of Philosophy, Webster's Online Dictionary, Dictionary. Com, Online Dictionary of Nanotechnology, Computer Dictionary, Medical Dictionary, Dictionary of Medical Abbreviations, Dictionary of Geographical Abbreviations and Acronyms, Open Directory , Acronym Finder, General Thesaurus, Roget's Thesaurus, World Atlas, Maps of India, Weather, Earth Calendar, The Almanac, Dictionary of Quotations

- **Online Print Journals subscribed.**
- **Online Databases subscribed (DELNET Databases).**
- **UGC – Infonet E- Journals Database.**
- **Online Open Source Journals for Faculties of Jamia Hamdard.**
- **Free Databases for all users.**
- **Access to Resources of Digital Libraries in India.**
- **Nanotechnology Infomine**
- **Online Journals and books on Medical Sciences and Allied fields**: Free E-journals, Free E- Medical Journals, Free Medical E-Books.

LIBRARY SERVICES

Quality of library depends upon its services. It does not depend on its huge resources, big building and large number of employees. In order to provide maximum possible services with the present infra-structure, Jamia Hamdard library has planned its services in two modes:

- Conventional mode;
- Online mode.

Conventional services

Under conventional mode, library is providing following services:

- Circulation service
- Reference service
- Reprographic service
- Bibliographic service on demand
- Inter-library loan
- Press Clipping service
- Art and Calligraphic service
- Binding service, etc.

Library Services Online

Under online mode, library is providing following facilities:

- INTERNET Access facility
- Access to UGC-INFONET E-Journal Databases
- CD-ROM Search facility
- Catalogue databases of books, journals and theses/dissertations search services, etc.

Jamia Hamdard Library provides access to online journals, which are free against subscriptions. Any user in the Campus, who are connected with Campus Network having internet facility can access these online journals.

Hamdard University Library has been a member of **DELNET**(Developing Library Network) since 2004. All the teaching staff, research scholars, students and others are making use of the services rendered by DELNET.

The complete database of the library is available world wide on the INTERNET through Web OPAC . Any user from any part of the world may access our database by visiting the university Website : http://www.jamiahamdard.ac.in and http://www.jamiahamdard.edu

PRESS CLIPPING SERVICE

A unique feature of the Central Library is its 'Press Clipping Service'. The founder of Jamia Hamdard , Abdul Hameed started building up of a collection of Press Clippings from the days of partition of India relating to the fields of Unani Medicine, Pharmacy, Nursing, Education, Religion, etc. Research Scholars, academicians and many administrators use this collection. Today, this collection has grown to about 1 lakh.

MANUSCRIPT

The Central Library has about 4000 manuscripts, having great research value. They are mostly in Urdu, Arabic and Persian languages dealing with almost all important areas in the field of Islamic Studies, Medicine and different branches of sciences. Most of these manuscripts are handwritten by the authors. Printed catalogues of manuscripts of different libraries in India are also available for consultation in the section.

CONCLUSION

There is no separate budget for E- Learning. No extra staff is engaged for E- Learning work. LIBSYS 4 software are used by HMSCL. Storing devices like CD- ROM, Pen drive and DVD are used by the library users. E- Journals are used frequently by library users. The E-learning services have provided access to unimpeded flow of the global knowledge pool.

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Library Science

KNOWLEDGE MANAGEMENT IN ACADEMIC LIBRARIES

Aruna Sinha*

ABSTRACT

The emerging field of knowledge management offers academic libraries the opportunity to improve effectiveness. This paper discusses Knowledge Management theory and its application for library management.

Keywords: Codification, knowledge management, social capital.

INTRODUCTION

Knowledge is an expensive commodity, which if managed properly, is a major asset to the modern library. Knowledge management is concerned with the exploitation and the development of the knowledge assets of an organization with a view to furthering the organization's objectives. The knowledge to be managed includes both explicit, documentary knowledge and subjective knowledge, which resides in the minds of employees. Knowledge management embraces all the process associated with the identification, sharing and creation of information. Knowledge belongs to humanity and it is the torch, which illuminates the world. If the knowledge is to be kept radiant, it must have an impact over society. In old paradigm, "*Knowledge was Power"* must pave way for new motto, "*Sharing Knowledge is Power"*. The demands of education in the 21st century is growing fast and indicates the direction of development towards creation of "s*ocial capital*" and "*wealth creation*" through knowledge services.

Knowledge Economy is a knowledge- based economy. In the Knowledge Economy era, the management refers to effectively identify, acquire, develop, resolve, use, store and share knowledge, to create an approach to transforming and sharing of tacit and explicit knowledge, and to raise the innovation capability by utilizing the wisdom of the team. Since knowledge has become the driving force for social development, the attention of the society towards information and knowledge is rising and people's demands for information and knowledge are increasing step by step. This has provided a good environment for library development. Moreover, as information and knowledge has become important productive factor for the modern economic system, the society will inevitably require intensified management of information and knowledge. How to manage knowledge will become important subject facing libraries in the near future. Knowledge management in libraries should be focused on effective research and development of knowledge, creation of knowledge bases, exchange and sharing of knowledge among library staff (including its users). Training of library staff, speeding up explicit processing of the implicit knowledge and realization of its sharing.

WHAT IS KNOWLEDGE MANAGEMENT?

Colleges, universities and their libraries are social organizations where workers transform resources for use by consumers through the function of teaching, research and services. Knowledge management may be defined as the set of process that create and share knowledge across and organization to optimize use of judgment in the attainment of

***Aruna Sinha** is a Research Scholar at Mewar University, Chittorgarh, Rajasthan. She is working as the Librarian, Baikunthidevi Kanya Mahavidhyalya, Agra, U.P. E-mail: sinhaarunasinha@gmail.com

mission and goals. It is an emerging discipline developing on the interstices of organizational psychology, Library and Information Science, Economics and Computer Science. KM is the art of creating value from organization's knowledge assets.

Herein are some of the description about KM by the world's leading thinkers on Knowledge Management:

"*Most activities or tasks are not one-time events. Whether it's drilling a well or conducting a transaction at a service station, we do the same things repeatedly. Our philosophy is fairly simple: every time we do something again, we should do it better than the last time"*

- (Sir John Steely Browne, BP, Harvard Business Review, 1997)

"Knowledge Management is the discipline of enabling individuals, teams and entire organization to collectively and systematically create, share and apply knowledge to better achieve their objectives."

- (Ron Young, CEO/CKO, and Knowledge Associates International.)

"Knowledge Management will deliver outstanding collaboration and partnership working. It will ensure the region maximizes the value of its information and knowledge assets and it will help its citizens to use their creativity and skill better, leading to improved effectiveness and greater innovation"

- (West Midlands Regional Observatory, U.K.)

We can define Knowledge Management as the collection of process that govern the creation, distribution and use of knowledge. It is also described as a collaborative process through which organizations gernerate value for their intellectual assets. Educators generate value when they conduct, report results and sometimes develop new products. Knowledge management has evolved from the combination of two factors-intellectual capital and intranets. Three Main Types of activities are covered under the KM:

- **Knowledge Generation:** Creation of new ideas and new patterns.
- **Knowledge Codification:** Converting one form of knowledge to another form of knowledge.
- **Knowledge Transfer:** Ensuring exchange of knowledge between individuals and departments or units of the organization.

Knowledge Management in academic library

Role of knowledge management in libraries have become more and more important along with the development of knowledge economy. As a new method *Knowledge Management* in libraries leaves much to be desired in its theoretical system. Knowledge Management in libraries should include such aspects as followers-

- **Knowledge Innovation Management-** Knowledge Innovation Management in libraries refers to the management of the production, diffusion and transfer of knowledge as well as of the network system constructed by related institution and organization. It includes three aspects- i) theoretical, ii) technical and; iii) organization innovation management. Theoretical innovation management is to enrich and enlarge the theoretical and practical research fields of library and information science. Technical Innovation Management manages the network systems constructed by institution. It supports the evolution from conventional libraries to electronic or digital libraries. Organizational innovation management supports to create an effective management system adaptable to the operation procedures of libraries.
- **Knowledge Dissemination Management -** Libraries may play the part of knowledge pool, and use diverse media and channels to disseminate various new knowledge. Dissemination or communication of knowledge is an integral part of KM. Technology helps libraries to share knowledge recourses and expertise. Availability of open resources on internet and www and online education has made knowledge multi -sourced in "*anywhere, anytime*" paradigm.
- **Knowledge Application Management –** Library should attach importance to provision of services for people to acquire knowledge and achieve maximum function and efficiency of knowledge information based on high speed networks. It may be possible by setting up virtual libraries or Information Centers for enterprises, government and public organizations; scientific research institutions or setting up digitized knowledge services.
- **Human Resources Management-** We should pay full attention to diversity and variation of library staffs'

requirements, strengthen management of different library staffs by applying contingency management approach.

Knowledge management is a conscious strategy of getting the right knowledge to the right people at the right time. KM is being used to improve library operations. Form theoretical point of view, knowledge can be considered as a pyramid. All knowledge begins at the bottom of the pyramid with data and unfiltered facts. When some context is added, in the case of libraries through cataloging or metadata, data become information. When inference is added such as references, information becomes intelligence, intelligence combined with certitude becomes knowledge and at the top; knowledge combined with synthesis becomes wisdom. Libraries have excelled at creating scholarly information and intelligence from data but they have not been as successful in generating organizational knowledge to achieve library goals. Knowledge Management is one way to develop and apply the organizational knowledge needed to improve library operations and effectiveness by developing skills.

Role of Library Professional in Knowledge Management framework:

Library professionals seek to accomplish following tasks:

- Able to deal with new technology.
- Generating new knowledge.
- Expert in capturing and transferring of information.
- Sharing knowledge without any geographical limitation.
- Manage knowledge as an asset.
- Representing knowledge in documents and database.

CONCLUSION

Knowledge Management is concerned with the entire process of discovery, creation, dissemination and utilization of knowledge. Librarians can use Knowledge Management to expend the library's role in administration and support services. They must have strategic goals, involve their users, and recognize technology as a functional tool. Knowledge Management can lead to a large role for libraries in broader academic community. Lets us hope that in the coming years Knowledge Management would prove a good step in the right direction of every Indian educational institutions.

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Education

INCLUSIVE CLASSROOM AND SOCIAL DIVERSITY IN INDIA: MYTHS AND CHALLENGES

Sanjay Kumar*

ABSTRACT

The paper is based on an ongoing programme conducted by Deshkal Society, Delhi on "Enhancing School Effectiveness through Inclusive Teaching and Learning: An Innovative Action Research in Two Rural Government Primary Schools in Gaya District of Bihar". The paper discusses prevalent myths among the educators about the children's individual and collective identities and their abilities. These are often deeply rooted and shaped by varied socio-cultural contexts which have remained largely unspoken but understood by those who believe in diverse societal norms. Therefore, inclusive education has variety of challenges in the contemporary set up. As the school system becomes increasingly diverse, relationships inherent in its structure (student-to-student, teacher-to-teacher, administrator-to-teacher, school boards-to-administrators, parent-to-teacher, etc.) also become more complex. By bringing together myriad social affiliations, gender orientations, economic levels, belief systems, and cultural norms, the institution of schooling poses a plethora of challenges which are not limited only to classrooms but also include the space outside the formal classroom. The paper provides new insight into teacher education reform in connection with the increased intake of diverse learners in elementary classrooms.

Keywords: Children with special needs (CWSN),Dalit, Diversity, Education Volunteers (EVs), Inclusive education, Learning Support Centres (LSCs), Musahar, *sanskara*, Sarva Shiksha Abhiyan (SSA).

INTRODUCTION

> ***"****The desire for our children's well-being has always been the most universally cherished aspiration of mankind."*
>
> **-Kofi Annan in *We the Children,***
> **UNICEF, June 2001.**

Today the increasing number of learners from diverse backgrounds entering elementary classrooms has reinforced the importance of making schools more inclusive. With a greater variation in the talents, and social, cultural, economic and political backgrounds of the learners, the elementary class-room in India faces a challenge to use this diversity constructively in order to democratize the teaching-learning processes and practices, and achieve the larger goals of social justice.

In this context the agenda of "inclusive education" has gained importance. There has been a further impetus with the enactment of the Right of Children to Free and Compulsory Education (RTE) Act, 2009. The implementation of this Act

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***Sanjay Kumar** is a Delhi-based researcher, social activist and Secretary of Deshkal Society. He has co-edited *Asserting Voices: Changing Culture, Identity and Livelihood of the Musahars in the Gangetic Plains*(2002), *School Education, Pluralism and Marginality*(Orient BlackSwan,2012) and *Interrogating Development: Insights from the Margins*(OUP,2010).

will be considered successful only if it addresses the issue of making the children of marginalized communities "visible" within the four walls of the classroom.

Many of these children, across the country come from socially disadvantaged backgrounds, such as Scheduled Caste (SC) and Scheduled Tribe (ST) communities; ethnic and religious minorities, economically weaker sections (EWS), migrant labourers, nomadic and de-notified tribes, urban poor, Children with special need (CWSN) and so on. Although children of these communities are enrolled in school, they face the danger of dropping out. Many of them live in extremely vulnerable socio-economic conditions and face a serious threat to their universal rights, such as a school education. From a learner's point of view, RTE, 2009 provides a legal framework to make school admission, attendance and completion compulsory.

With physical access taken care of to a greater extent, it is no longer enough to talk merely about provision of universal access. Rather, the growing importance is to make school education free of anxiety, fear and stress for the diverse learners. In this context, the quality of teaching-learning practices and processes has attracted the attention of all the stakeholders of elementary education. It is now a widely recognized fact that glaring achievement gaps exist between the children of marginalized and non-marginalized communities. At the very heart of the issue that has occupied recent debates and discussion about making school education "stress free" and "child friendly" is the teacher and teaching practices (*GOI,* 2009, p. 9).

In fact, in recent decades, various studies, reports and documents have revealed that in the classroom, curriculum delivery and pedagogy in contemporary mainstream government schools in India, children—especially those belonging to the marginalized communities—are subjected to various forms of discrimination and humiliation which severely affects their self-respect and self-confidence. Children have narrated painful stories of their experiences in the classroom and shown their resentment to this, as well as towards the teachers (*Probe Report,* 1999; *Nambissan,* 2001; *Govinda,* 2002). Some children have undergone violent experiences inflicted by teachers as well as their classmates from dominant castes. A study of schools in Uttar Pradesh by *Dreze and Gazdar* (1996) reported that teachers refused to touch SC children. They were subjected to verbal abuse and physical punishment by teachers, and were frequently beaten by their upper-caste classmates.

Recognizing the complexity of issues regarding teacher-based practices the RTE Act, 2009 makes it obligatory to change the general perception of children as passive receivers of knowledge, and to move beyond the convention of using textbooks as the basis of examinations. Going beyond the issue of making elementary education legally compulsory, it talks about the pedagogic factors that prevent learners, especially those belonging to disadvantaged social backgrounds, from a comprehensive and continuous elementary education, in the context of ensuring quality education for all. The Act states that the curriculum should provide for learning through activities, exploration and discovery. It intends to address the pressing issue of teacher-based reforms in the classroom to hold teachers accountable for the violation of a child-friendly environment in the classroom. Further, it emphasizes an examination of the assessment system to redesign it to suit the needs of all learners.

Similarly, several years earlier, the National Curriculum Framework (NCF), 2005 also attempted to address the issue of "child-friendly" teaching-learning. NCF, 2005 also notes the fact that learning has become a burden, causing immense stress to children and their parents, which are evidenced by the deep distortion in educational aims and quality. NCF 2005 makes a series of observations and suggestions about pedagogy, curriculum, teaching-learning material, and class-room and school environments. It notes that:

Children's voices and experiences do not find expression in the classroom … [T]he curriculum must enable children to find their voices, nurture their curiosity to do things, to ask questions and to pursue investigations, sharing and integrating their experiences with school knowledge–rather than their ability to reproduce textual knowledge.

NCF, 2005 thus recommends a child-centred pedagogy giving primacy to children's experiences, their voices and their active participation. However, the curriculum frame-work also observes that:

This perspective on the learner may sound "obvious" but, in fact, many teachers, evaluators and textbook writers still lack the conviction that this can become a reality.

It also observes that many schools now have large numbers of first-generation learners whose parents cannot provide them direct support in their schooling, and therefore, the pedagogy must be reoriented to meet their schooling needs.

In fact, the necessity to address teacher-based practices in the changed circumstances of elementary education in

India has been even more strongly emphasized in the recently released National Curriculum Framework for Teacher Education (*NCFTE*, 2009):

One finds the situation on the ground ridden with difficulties. Regional, social and gender disparities continue to pose new challenges. This reality increases the challenge of implementing the Right of Children to Free and Compulsory Education Act and, in particular, the role and place of the school teacher ... (ibid., p. 2)

NCFTE, 2009 takes serious note of teacher education reform in connection with the increased intake of diverse learners in elementary classrooms. It envisions a teacher education framework that satisfies the needs of the time:

There is increasing recognition of the worth and potential of social context as a source for rejuvenating teaching and learning. Multi-cultural education and teaching for diversity are the needs of contemporary times. (Ibid.,(p. 19)

Along with recognizing the issues to be addressed in the context of teacher education reform, the document stresses an urgency to provide due emphasis on developing reflective teachers with positive attitudes, values and perspective; developing teacher education curricula on the basis of the changing requirements of time; and develop skills in the art of teaching. Despite such serious concerns it is still a fact that children belonging to marginalized communities and girl children have persistently "under-achieved" in school. In fact, not only in India but also at the global level, current strategies of educating children of marginalized communities have been severely questioned (*UNESCO,* 2003).

A significant aspect worth mentioning here is that much of the current debate on the underachievement of children of marginalized communities takes place at a level that treats the problem as a "technical issue". That is to say, the current debate treats the historical underachievement of children of marginalized communities as being caused by faulty and inadequate teaching-learning practices and processes. However, posing the problem in such a manner means that the only possible solution considered is the "right teaching methods" or finding the "best practices". This is a gross misrecognition of the issue and has compounded the problem further. As a result, considerable time has already been wasted in crying out for a bagful of pedagogic tricks. Perhaps we have only scratched the surface of a far more complex and deep-rooted problem.

PERSISTING MYTHS

The persistence of discriminatory practices by teachers, educators, school authorities and all of us in general about underachieving learners' socio-cultural identities and abilities are based on a number of problematic assumptions. Some of these pertain to pervading beliefs and common perceptions about the children's individual and collective identities and their abilities. These are often deeply rooted and shaped by varied socio-cultural contexts which have remained largely unspoken but understood by those who believe in diverse societal norms.

MYTH I: Children Are Children After All … They Are the Same

No. Children have multiple and diverse identities. But why do children look similar? Imagine children at school with their school uniforms! Don't they look similar? In fact they do; not only in their physical appearances, but also with respect to certain perceptions about them. Generally, attributes like playfulness, innocence, purity, goodness, naiveté, etc. are used while talking about a child. A child is a child after all! And thus all children are tucked into a common blanket identity. Take the case of Mohit for instance. Mohit Bhalla is in Class IX and is 14 years old. He was born in Delhi and lives in a middle class housing colony.[1] The children with whom he plays are from different schools, and he is quite comfortable with them. But he considers them only playmates and does not discuss his problems with them.

Mohit wants to become a "pilot" when he grows up: "*By becoming a pilot I will finish the enemies of the country and there won't be any infiltration*." Infiltration by Pakistani nationals worries Mohit a great deal and he constantly reiterates his desire to "protect" the nation from disloyal and vile enemies from across the border. Becoming a cricketer is another favourite: "*By playing well I can make India win the game ... I will change the whole structure/map (nakshaa) of the country*."

Communication with his family members is somewhat restricted and it is only when they have dinner together that they talk about his school, his friends and teachers. Contrary to the school practice of "havan" and its attendant religious discourse, Mohit does not believe in outward religiosity and says, "Mind is temple itself. My mother asks me to go to the Hanuman temple every Tuesday but I personally feel that if we don't go to the temple and just remember God silently ("maun") then also he will listen." Mohit has participated in the *havan* twice, "I used to sit just because I am asked to sit."

Mohit's reference to the bomb blasts in cinema halls in Delhi is fraught with the circumstances of Hindus and Muslims in the context of India and Pakistan. Interestingly, the newspapers later reported that the terrorists arrested for this act were in fact from the Punjab but this does not deter Mohit from expressing his strong views: "*Yes I came to know about the incident from the TV news. Now these things will happen if we allow the bus service to Pakistan. And now they are saying that they will start a train from India to Pakistan. This will make the process of infiltration much easier for the terrorists. It very often comes in the daily newspaper about the infiltrators who come from Pakistan and are caught over here. There should be a strict vigil on the boundaries of our country, otherwise again there will be Muslim rule."*

Mohit's narratives reflects the fact that while it is true that diverse learners in classrooms look similar in the eyes of a teacher, behind their common identity lies a "child", and each learner has a different interpersonal and collective identity. It is similar to a piece of ice floating on the water, wherein the major part is hidden below the water. The personal or collective identity of a learner is considered to be formed and moulded by the socio-economic and cultural milieu in which he or she grows up. For instance, the very socio-economic and cultural milieu under which a Dalit child grows up in India is significantly different from a non-marginalized child studying in an elite school in urban India.

Contemporary thinking in child development also points out that a child's identity is a complex one. Children begin to learn complex social realities around them at a very early stage which influences to a large extent, the way they perceive themselves and others. From this perspective, rather than children being empty vessels as generally perceived, their "social" identity and consciousness about their personal and collective identities are in fact to a large extent formed before they enter school.

However, it is observed that the mainstream perception of learners dominates those involved in educating children. Such a perception is widespread among people around whom these diverse learners grow up—teachers, parents, school authorities, community members, etc. The way these learners are perceived by other people around them informs to a large extent how they are expected to appear, behave and respond to others, more specifically in the context of the classroom.

The gap between the common perception about learners' identities and their actual reflection of their "social selves" is so wide that sometimes it becomes almost difficult to hold a discussion in the classroom. For instance, a female teacher who taught at the Gyansthali Public School in Jhansi, faced stiff challenges in teaching from the history textbook in the classroom after 9/11 (*Chitalkar,* 2007).[2] The students in the school were predominantly from the disadvantaged sections of society—Scheduled Castes and the OBCs. The Muslims in the school were present in the ratio of 1:10 with roughly four Muslims in a class of 40 children.

Lessons progressed smoothly and she enjoyed teaching, till she started teaching the chapter on India's struggle for independence, especially the portion on the Muslim League and communalism from the prescribed history book by NCERT for Class X. Media images of the hijacked planes crashing into the twin towers, fresh in the memory of the learners, became the central point of discussion in the classroom. The words, "communalism" and "partition" were used to bait the Muslim students in the class. "*See they are killers*" said the non-Muslim learners. The teacher's response to the Gujarat riots was: "*They deserve it*."

Every history class degenerated into a verbal duel with possibilities of physical duels on the issue outside the class appearing very real. Attempts to mediate by the teacher were countered by scathing remarks by non-Muslim learners *"Madam, are you Muslim?*" The teacher finally decided to discontinue teaching that particular lesson, since neither severity on her part or attempts at resolving the issue had any effect on the learners. The prejudices ran too deep and the school authorities were not interested, and nor were they equipped to deal with the situation. Peace was finally restored when the teacher resorted to the safer geography portion of the syllabus.

This example illustrates that the myth that children are all the same is false, and that children come to school not only with their own individual identities and experiences, but also with a consciousness and identity formed while growing up as members of collectives.

MYTH II: Learning Achievements of Children are determined by Heredity

No. Learning achievements of children are not linked to heredity in any way. Stigmas and prejudices have influenced notions among teachers and school administrations about the learning potential of children from different backgrounds. Social experiences of children in elementary schools across India point towards the fact that such notions are often based on prejudices and stigmas regarding caste, class, religion, ethnicity and language.

The underachievement of marginalized children and the gap between their learning abilities and non-marginalized children are seen in the light of heredity-based factors such as caste. For instance, a study by a Delhi-based civil society organization in selected elementary schools in Gaya district, Bihar unearthed the fact that belief in the notion of "*sanskar*" and inherent "non-educability" of children from marginalized communities adversely affects the nature of teacher-student and teacher-community relationships as well as the overall school ethos and environment. Surveys carried out in the course of the study revealed that teachers generally do not indulge in any overt acts of discrimination against children from marginalized communities. Rather, social exclusion has taken on a "silent" nature which is characterized by the indifferent attitudes of teachers and school administrations towards the learning achievements of children of marginalized communities such as the Musahars.

Teachers in the elementary school in Gaya where Musahar children are being educated attribute their underachievement to their "impure" culture in which parents indulge in practices like rearing pigs and eating pork. They are considered to lack "*sanskara"* – the sociability to be eligible to learn. Although caste is not directly referred to by teachers during their interactions with the students, it is the apparent lack of *"sanskara*" which dominates their perception and attitudes towards the Musahar children. As stated by a teacher of Majhauli Primary School in Gaya: "*Pigs eat filth. Wherever they go they make the place filthy. Due to pig rearing, the children and parents of the Musahar community can never develop good 'sanskara'*" (*Singh and Kumar,* p. 38).

A teacher in a primary school in Dhareya, Gaya even went on to explicitly state that "*one cannot even dream of the mental development of those who are engaged in 'pig-rearing'*" (*Ibid.*). Caste has been substituted by the notion of "*sanskara*" to explain the educational failure of marginalized children and to their inherent or heredity-based non-educability. The teachers however are reluctant to discuss the caste factor directly. They assert that the caste identity of children does not matter in school and every child is treated equally.

Further, teachers' belief in the hereditary educability of children and their attitude of attributing the children's educational failure on their "*sanskara*" has also resulted in antagonistic relationships between teachers and parents, especially parents from marginalized communities. The latter openly blame the teachers for the failure of their children. They claim that the teachers show minimal interest in their children's learning and, therefore, do not make any effort to "discipline" them during school hours and keep them within the school premises. Ironically, these parents even go to the extent of saying that teachers should physically beat the children in order to inculcate discipline. On the other hand, teachers say that if they do this, these same parents will oppose it violently.

Within the classroom, the beliefs about hereditary educability of children are further reinforced by the teaching-learning methods which are dominated by the centrality and supremacy of the teacher and the textbook. Instead of encouraging students from different backgrounds to participate in co-constructing knowledge and building on what they already know from their life experiences, their knowledge is de-legitimized as something not worth knowing, and their initiative and enthusiasm for learning through co-construction of knowledge is cut short. Often, attempts by students at interactive engagements during the teaching transaction are rejected by teachers as violation of the moral order, standard behaviour and discipline in the classroom.

The dominating attitude and opinion among teachers in this regard is represented by what a female teacher said during an interview: "*These children are all of low learning capability, and we (the teachers) have to make them learn the right things*" (Sushila Prasad, teacher, Majhauli school, quoted in *Singh and Kumar,* 2009, p. 48). Implicit in this attitude is the view that what children already know from their everyday experiences is not the right knowledge to learn in the context of formal education, and that, in any case, children's ability to learn is determined by heredity rather than by what happens in the classroom.

MYTH III*: 'School Kids' Are Different from 'Street Kids'*

No. Children are not born with any prescribed identities. Rather they are given these or they gradually acquire them. It is often observed that among different learners "school identity" and "social identity" do not match in the perception of teachers and educators. For instance, the salience of school kids is often found in perceiving them as "homely", "good" and "obedient". They are "silent", "serious" and do their homework properly, and generally listen to the teachers. They dress smartly, are neat and clean, maintain good hygiene and their parents take a keen interest in their education.

On the contrary, the identity of street kids is relegated to "non-serious" learners in the classroom. Street children often suffer from poor motor control. Their restlessness, the "adult-like" orientation in their behaviour is stigmatized in a diverse classroom as having "deviant" characters. They are frequently identified as not having the traits of a "child".

Teachers and school authorities tend to develop a poor opinion about them. Ultimately, these children feel like "fish out of water" in a diverse classroom. Their alienation from the classroom and its teaching-learning practices and processes finally leads them to drop out from school.

Teachers in particular and school authorities in general perceive that street children come to school to "pass time" by playing with their friends rather than to study. Those who are unruly and play pranks, are the "bad ones" and those who are "silent" and "serious" who generally abide by what the teachers say, are the "good ones". Such labelling in fact makes the difference as to who can "make it" in the eyes of the teachers and who cannot. This prejudice emerges from the fact that "school children" have a different identity from those who come only to pass time – the "trouble makers", the street children. Their parents are perceived to lack any interest in whether their children learn or not as they will shortly follow what their parents do. Their parents send them to school to get rid of them during their working hours.

Street children are often engaged in daily survival. They develop resourcefulness, self-reliance and independence and other survival skills in a hostile environment. Alienated from mainstream life, they have no social status in the larger society where their existence is tolerated, but not trusted, as their background is unknown. Because their contacts in society are mainly casual, street children rarely develop any "protective relationship" with non-street people. They live in their own world, seeking the support and protection of the local gangs for companionship or to learn the ways of street life. They sometimes develop a group identity, and occasionally a spirit of camaraderie, which meets, however imperfectly, their emotional and psychosocial needs (*Bose*, 1992, p. 52).

The failure to understand the emotional and psychosocial needs of street children within the classroom is a major factor in their dropping out. For instance, the teachers and administrators of schools managed by Brihan-Mumbai Municipal Corporation (BMC) were quite enthusiastic when large numbers of street children participated in the introduction of *balsakhis* in school. However, as the days passed several of them had dropped out of the schools. Under the scheme, the initial attractions for the street children were the free clothes and study material provided by the schools.

Raju (11 years) used the free distribution policy to take care of his wardrobe for the next six months. He first enrolled in a school at Mahalakshmi. Within a week, he changed his "address" and landed on the streets at Dadar, where he was enrolled in a civic school. His final stop was Borivili (E), where he was registered for the third time in 35 days. In all, Raju collected three sets of uniforms. *"He even got free books from the second school, sold them and earned a neat Rs. 100*", says his friend Chotu (11 years), his tone tinged with awe and envy. Attendance dwindled and finally petered out. "*Didi (the balsakhi) ne bola ke agar mei school jau toh mujhe pehne ko kapde milenge, esiliye mei school mei bharti hua (Didi told me that if I go to school, I'll get free clothes and that is why I enrolled),"* says Rasik (10 years), who lives on the streets near Haji Ali (*Express News Service*, September 8, 2000).

Principals in civic schools concede that the plan has its inherent difficulties. Says Ram Sharma, principal of a Hindi-medium school at Mahalakshmi: "Street children don't even inform the school that they are moving out of the area and are going some place else. And it is very easy for them to register in another school in a different ward with the balsakhis and teachers so enthusiastic about enrolling yet another child in their school." Other principals agree. Says Meena Phondge, Principal of a Marathi-medium school: "The children who continue schooling have a permanent home and a more or less stable home background. It is the street child who will not take the school curriculum for more than five days straight. Take any attendance register and it is as clear as day that a majority of students who play truant live on the streets," she confirms.

The children, on the other hand, blame the teachers for their disinterest. Most of them complain that they are either rude or ignore them completely, because of which they don't feel as though they "belong". Some of them are also beaten, they claim. Parroting alien rhymes like "Twinkle, twinkle little star" and "A for apple" is the clincher. So, they simply leave; free uniforms notwithstanding. Says Imran (7 years), "I might as well continue begging at traffic signals. That way, I earn at least Rs. 40 and don't have to take orders from a teacher" (*Ibid*.).

Such instances clearly indicate that teachers and school administrations lack a proper social understanding of street children. While the identity of those marked as school children poses no conflict with their corresponding social backgrounds; it is not so in the case of street children. Their family backgrounds and social associations are not perceived to fit in with the school children's social backgrounds. Street children's peer associations are viewed with suspicion. Their "street" identity acts as an impediment in developing meaningful relationships with their teachers, co-learners and the school in general. In fact, inside the classroom their "street" identity is reinforced by their poor academic achievements, and is further legitimized in the perception of teachers and educators.

MYTH IV: Boys Are for Schools, Girls Are for Marriage

No. It is a traditionally created male viewpoint. So far, schools have also represented and reproduced such a conservative perception about the girl child. For instance, take the case of the Meo Muslim girl children of Rajasthan who are first-generation learners. A comparative study between two villages, one in which a school intervention was conducted and the other where it was not, revealed minimal school participation and integration by the Meo Muslim girl child. Her daily routine remained almost similar to what it was before the school intervention programme.

A typical day for the Meo girl child starts at dawn and ends late in the evening. She prepares breakfast, milks the cattle, fetches water from the pond, cooks the lunch food, washes clothes, collects dry wood and leaves, feeds the cattle, takes care of her younger siblings and helps members of the house with other chores "*Savere se shaam tak kaam hoe hai, ladke to na karen* (we work from early morning to evening but boys don't work)" says Afsana (14 years), a first-generation Meo Muslim learner. In between she manages to go to school. She wishes she could be a boy! "*Ladka ho to itna kaam na karna paro… ladke ko baat sunna pado jab koi kam no baro, yo saver mein uthe to bhi baat sunna pado* (if I were a boy I would not have to work so much…boys are scolded when they do not complete their assigned jobs, but girls are scolded from the moment they leave the bed" (*Ahmad*, 2005, p. 78).

Within the classroom, the Meo Muslim girl faces stiff challenges. Owing to the traditional values held by the community which bars girls from coming into contact with males, they hesitate to interact with the teachers. The regular absenteeism of teachers from the classroom is perceived as a risk factor by the community members where girls are left un-chaperoned in the presence of their male co-learners. The girls are unable to participate in the reading and writing exercises within the classroom. In fact, community members see their participation in school in a poor light.

The community members maintain school education almost as a waste of time as they find Madarasa education more suitable for them compared to boys who are regarded as the future wage earners of the family. This is well reflected while interacting with the male and female parents and grandparents of Meo girl children. "School education" is given low emphasis as a criterion for a "good girl". In their views, other socio-religious criteria such as observing religious rituals, early marriage and lending a helping hand in household chores are given more emphasis. For girls, more than school education, Madarsa education is considered suitable for their proper upbringing within the mores of the Meo community.

The social values held by the community are also reflected in the Meo girls' self-perception. They too differentiate between "good" and "bad". This is reflected in Afasana's view when asked why she preferred a Madarsa to a regular school: "*Ladke wale puche hai ladki dini talim aur Urdu jane ya na* (the groom's side mostly inquires if the bride is properly educated in religious education and Urdu)" (*Ibid.*, p. 78). A similar opinion is hold by young Meo co-learners like Asim who maintains: "*Ladke kamao hain. School mein padhai ke baad, ladki to shaadi ho jai hai. Padhai zaroori na ho utni* (Boys earn! What is the point of girls going to school since they will get married soon? School is not so important for them)" (*Ibid*., p. 77).

Like Afsana, Champa (12 years) is a bright Dalit learner studying in her village school in Class VI. Both her parents are landless farm workers. Their income was so meagre that they decided to ask Champa to drop out of school. She protested vehemently as she wanted to continue. To console and please Champa her parents told her, "We will make you happy my child by getting you married.." Champa responded, "You do not want to make me happy by letting me attend school." The grandmother tried, "Don't feel bad, my child, we will find you a good boy." Champa asked, "How am I to get a good boy when I am not going to be educated?" (*Macwan*, p. 17).

Even if girls do happen to go to school they are discriminated against in the choice of school. An interesting phenomenon of social discrimination was noticed in a family of the Berwa tribes in Ujjain, which preferred to send their boys to private schools but their girls to low quality government schools.

The voices of girls such as Afsana and Champa amply reflect the social experiences of girls growing up in disadvantaged backgrounds where their education is widely perceived as having less value than that of boys. Their involvement in sharing the burden of household chores starts from childhood and continues throughout their school years, and this is never acknowledged. In a Hindu-dominated social upbringing, the arrival of a son is greeted with happiness, whereas the birth of a daughter brings forth uninhibited expressions of melancholy or indifference *(Kakar*, 1978).

A similar moment arrives when a girl reaches puberty. She loses her role in festive rituals on account of having become "impure" due to the onset of menstruation. The development of the "negative self" is built up in successive years of social experiences eroding the very autonomy of the "self". Traditional practices such as early marriage add another layer of disadvantage to this. In fact, the customs and rituals under which girls are brought up and gendered into

womanhood constitute a regime which is incompatible with the normative view of a childhood which is implicit in child-centred policies of education. In this regard, child-friendly and special strategies to educate the girl child in the future will only gain in reality and value when such approaches to education take into account the larger cultural context of girlhood (*Kumar,* 2010).

Myth V: Children Learn Only from Textbook Transaction by Teachers in the Classroom!

No. Children learn more outside the four wall of the classroom by interacting within the socio-cultural milieu in which they are born and brought up. There is a widespread belief that children learn more from school textbooks and teachers. Intelligent learners are held to be those who can better remember what is in the textbook and reproduce it in examinations. They receive accolades not only from their teachers, but also from their parents and community. It is frequently seen that instead of encouraging students' participation in the co-construction of knowledge and building on what students already know from their life experiences, their knowledge is de-legitimized as not worth knowing, and their initiative and enthusiasm to learn through co-construction of knowledge is eliminated.

Let us examine a day's teaching transaction in a school in Gaya, Bihar where a large number of Dalit children, especially Musahar children, are being educated in rural elementary schools. A teacher asked students in Class IV to write an essay on a village, in accordance to the exercise given at the end of the lesson 'Halwaha Rajkumar'. Some of the students, particularly those from the marginalized communities, wrote about the common features of their own villages from their everyday experiences, describing the crops grown in their village; how their parents work for landowners; how if the paddy crops are not good, they are bound to starve; if a chamar (SC) touches utensils belonging to other castes, the utensils have to be washed. These are everyday realities experienced by children in their social world (*Singh and Kumar*, 2009).

However, although the teacher himself was aware of these realities, since he is part of the same social world, he not only rejected these essays, but also passed derogatory comments on the low mental abilities and worth of these students. The teacher then gave instructions to the students to strictly follow the content and language of the lesson in the textbook while describing the village, which is as follows:

Second person (telling the first person): 'This is really a wonderful place. The son of the king holds the plough, no one is a servant of anyone, all are brothers.'

First person: 'Well Prince! What is the difference between you and the other citizens?'

Balram (Prince): 'The only difference is that we have some more land and a few more cows.' (*Ibid.,* p. 48).

This image of the village presented in the lesson contradicts the reality of everyday life faced by children from marginalized as well as non-marginalized communities. It is difficult for children to relate to the imagined description in the lesson, where the son of a king tills the land with his own hands, and where all the people live like brothers. Every day, Dalit children see their landless parents working on other people's land. They also see that people are divided into low and high castes and that low-caste people work for the higher castes. Rejecting this knowledge that these children have gained from their everyday experience, as irrelevant, and passing derogatory remarks about their inability to understand and learn the "standard" knowledge contained in textbooks, adversely affects their perception of self-worth and alienates them from the learning process.

On the other hand, when the children can relate their life to the contents of a lesson, they are mentally and emotionally involved in the learning process. This was observed very clearly by the researchers during a reading session in Class IV in Badka Bandh school in Gaya, Bihar. The lesson concerned a story about a peasant, Jhuri, and his two bullocks Heera and Moti. As the children related to the content, they listened to the story with rapt attention, their facial expression changing with every turn in the story. However, due to the teacher and text-centred transaction method, the students had no opportunity to engage in interactive discussion and develop critical thinking.

Teachers' devaluing learners' knowledge, especially of children of marginalized communities; do not communicate respect and dignity for the learners' socio-cultural milieu. Teachers and school authorities tend to put more value on caste, class, religion, ethnicity, language to recognize learners' knowledge in the classroom. Such biases and prejudices often damage children's educational opportunities, leading to alienation of learners from the teaching-learning environment of the elementary classrooms.

Children often put forward difficult questions directly related to the complex realities that they encounter in everyday life. Rather than encouraging a dialogue, their voices are muted in the classroom. A common perception held by teachers,

school administrations and parents is that teachers need to keep a safe "distance" from the learners in day-to-day classroom transactions. The learners are required to respond only to what teachers teach in the classroom. Any other kind of engagement in a dialogue with the teacher is considered as a threat to the integrity and knowledge of the teacher. It is perceived that if teachers become too friendly with learners, they could take undue advantage, and the teachers would "lose" control over the learners leading to gross indiscipline in the classroom.

The non-recognition of the learners' knowledge leads to confrontation between the teachers and learners in the classroom. Such a confrontation results in violence by the teacher since it appears to them that the learners are questioning the authority of the teacher. Learners are caned in the guise of disciplining them and make them more attentive to their studies. Moreover, parents also complain when teachers are friendly with learners and do not beat them. A classroom with pin-drop silence is what teachers and principals of most elementary schools expect. The dilemma between the emphasis on "learning through activity" and a "disciplined classroom" is shared by a teacher of an MCD school in Delhi:

Agar hum sochte hai ki bacche group work karein ... pairs mein team karein ... toh bahar walon ko lagta hai class humse sambhal nahi rahi..ab agar headmaster/headmistress bhi isi soch ki aur usse thodi bahut awaz theek na lage ... toh problem ho jatein hai

(If we think that children should learn in groups and pairs and the teacher does so, people tend to think that the teacher is unable to control the class. If the principal also thinks so, then the teacher is in a real mess!)" (Quoted in *Jain,* 2006, p. 137).

MYTH VI: Inclusive Education Means Enrolment of All Children in School

In the dominant discourse on elementary education in India, the meaning of inclusive education appears to be limited to merely school enrolment of children from all sections of society. However, several studies indicate that children from diverse socio-economic, cultural, ethnic, linguistic, religious backgrounds have different learning experiences and outcomes when they come to school. Inclusive education, therefore, needs to move beyond just enrolment to denote a feeling among all learners of "belonging equally" to the school, irrespective of their backgrounds. Inclusive classrooms and schools in this sense would mean a place where diversity among learners is appreciated and considered a learning resource rather than a problem; where children from diverse background are valued for what they are, and can feel safe enough to express whatever they know, without fear or discrimination; and where the curriculum, teaching-learning methods and materials are culturally responsive to meet the different learning needs and interests of children from diverse backgrounds.

CONTEMPORARY CHALLENGES

The myths discussed in the previous section provide a glimpse of how formidable the challenge to educate diverse learners has become. In fact, as the school system becomes increasingly diverse, relationships inherent in its structure (student-to-student, teacher-to-teacher, administrator-to-teacher, school boards-to-administrators, parent-to-teacher, etc.) also become more complex. By bringing together myriad social affiliations, gender orientations, economic levels, belief systems, and cultural norms, the institution of schooling poses a plethora of challenges which are not limited only to classrooms but also include the space outside the formal classroom. Some of the specific challenges in this regard are:

CHALLENGE I*: Recognizing the Increasing Diversity of Classrooms*

There is a need to recognize the changing social composition of learners in the classroom resulting from the increased flow of children from varied backgrounds in terms of caste, class, gender, ethnicity, language, religion, etc. This diversity also presents new issues and challenges to change curriculum design, teaching-learning practices and processes, learning materials, teacher education, etc. so that they meet the different learning needs of children from diverse backgrounds. In order to address these issues and challenges, policymakers and practitioners need to first recognize the different learning needs and interests of the diverse learners.

CHALLENGE II: Developing and Maintaining Disaggregated Databases on Diverse Learners

The increasing participation of diverse learners in the classroom has radically altered the social composition of elementary schools in India. Data on learning achievement, however, reveals a significant gap between children from different backgrounds. But, without a clear understanding of the socio-economic and cultural characteristics of these diverse learners, it is difficult to evolve strategies and develop plans at the classroom, school and system levels to teach these children. It is therefore necessary to collect relevant disaggregated data on diverse learners, and examine and analyse it in order to inform and shape policies and practices to make classrooms and schools inclusive and responsive to

the learning needs of children from diverse backgrounds.

CHALLENGE III: Developing Ethnographic Research Focused on Teacher Beliefs and Practices

A contextualized understanding of teacher beliefs and behaviour as well as the teaching-learning practices and processes, and their impact on the educational experiences and outcomes of children from diverse backgrounds is a crucial prerequisite to develop inclusive classrooms that are responsive to these children's learning needs and interests. Without this, it will be difficult to assess the professional development needs of teachers, and evolve appropriate training curriculum, practices and processes for them. Therefore, there is a critical need for school-based ethnographic research which can better inform policy and practice. As teaching and learning takes place in particular contexts, such research will also provide inputs to orient teacher training towards an understanding of the importance of contextual specificity and an ability to critically reflect on their own specific classroom contexts and practice. This will equip teachers with abilities to apply general principles of teaching for diversity in ways that work for their specific classroom situations.

CHALLENGE IV: Need For a Greater Focus on Diversity Issues in Teacher Training and Teacher Education Programmes

An effective and meaningful framework for teacher training and teacher education programmes would identify several professional development needs of teachers. To be effective, the framework should be linked to the changing social landscape of the contemporary elementary classroom in India. Teaching children from diverse backgrounds requires a tremendous amount of flexibility in teaching practices and processes as well as in curriculum design and learning materials. It also crucially involves reflecting on and examining teachers' personal and professional beliefs about diversity based on caste, class, gender, ethnicity language, religion etc., and analyzing how these influence their behaviour and relationships with children from diverse backgrounds. However, as evidence suggests, the ongoing programmes on teacher training and teacher education are yet to recognize and focus attention on the need to adequately address teachers' professional developmental needs to prepare them to teach diverse learners.

CHALLENGE V: Maintaining Teacher Diversity in the Elementary Teaching Workforce

Maintaining diversity in the teacher workforce is considered crucial for creating inclusive schools. A teaching force that more closely mirrors the student population can benefit both students and teachers. Diverse teachers can serve as powerful role models for diverse students, potentially motivating them to strive further in their achievements. They also bring to the classroom their unique experiences and perspectives, which can help them to better relate to their diverse students. They may also be more inclined to view student diversity in the classroom as a resource.

However, data in this regard suggests that while there has been an increasing flow of diverse learners in the classroom, the social profile of teachers has almost remained the same. The participation of the excluded groups in the teaching force, such a women, SC/STs, and religious, ethnic and linguistic minorities have remained lopsided within the recruitment processes. Moreover, a majority of the teachers recruited from these social categories in recent years are para-teachers who have remained out of the formal teacher training structure (*Govinda,* 2005), and their lower educational qualification and lack of professional training debars them from developing their professional careers.

CHALLENGE VI: Developing Organic School-Community Relationships

Involving parents and communities in school functioning can be an effective strategy to address diversity in the classroom. It also needs to be recognized that in the changing context of the increasing inflow of children from diverse backgrounds, it is important for schools to understand and articulate parent and community involvement in terms of socio-economic, cultural and political contexts. The current official mechanisms and structures (VECs and PTAs, etc.) prescribed to ensure community involvement do not appear to achieve the desired outcomes, particularly with regard to participation of the marginalized and excluded communities. In several villages, the local people are not even aware of the existence of VECs and their roles and responsibilities. In many cases, VECs become platforms for the powerful sections of the local society, and the marginalized and excluded communities feel powerless to assert their voices and participate in the functioning of the schools.

SILVER LINING TO THE CLOUDS

The challenges of inclusive classrooms and diversity discussed above appear formidable, especially because the mainstream policy and practice in the elementary education sector have yet to adequately recognize and focus attention on them. On the other hand, it is fortunate that during the recent decades, these issues and concerns have started getting the attention of a section of policymakers and practitioners. Various innovative experiments in school reforms have also

been taken up by civil society organizations as well as in the government sector in different parts of the country. These experiments have attempted curriculum design, development of teaching-learning methods and materials, and teacher development with child-centred inclusive perspectives. These have shown encouraging results in terms of the learning achievement of children from diverse backgrounds. For instance, the Loreto Day School in Sealdah, West Bengal uses a variety of teaching and learning methods to ensure that all children can learn intelligently in the classroom. Activity-based learning methods and the uses of local resources are emphasized. The school is sensitive to the children's different cultures and promotes appreciation and pride for each one. It recognizes the injustices poor children are subjected to and is flexible enough to give them first priority. The school is deeply concerned about the dignity of every child and carefully monitors all existing structures, eliminating or re-orienting those which could make a child feel inferior. The curriculum encourages the affluent children to mingle with children from the weaker sections of society and develop relationships. This exposes them to a variety of life experiences that children from diverse backgrounds bring from their homes or from the streets.

Care India has taken initiatives to promote inclusive and equitable classrooms in a few schools in Uttar Pradesh. The programme, implemented by civil society organizations, is based on the identification and analysis of the practices and processes of marginalization in actual classroom situations. A specifically designed tool of classroom observation from an equity perspective is used to capture the quality of teaching-learning and children's experiences; teacher behaviour in the classroom; peer behaviour among children; use of teaching-learning materials; and the varied learning needs of children. Based on the feedback of classroom observations, teachers are given onsite support through class demonstrations to ensure that they understand how to facilitate inclusive classroom practices and processes. Regular feedback from classroom observations and demonstrations are discussed and analysed in monthly meetings with teachers in order to keep improvising these practices and another innovative school reform programme was initiated by Deshkal Society in two government rural primary schools in the Gaya district of Bihar. A major focus of the programme is on improving classroom practices and processes of teaching and learning. The programme works with teachers, children, parents and community members to evolve context specific teaching-learning practices and processes which are child-centred, inclusive and relate to the diverse socio-economic and cultural backgrounds of the children. Issues and methods of intervention are discussed and identified through classroom observations, workshops and meetings with various stakeholders such as teachers, parents, children and community members.

Teachers are helped to first develop an understanding of the children's life experiences and knowledge of their socio-economic and cultural environment. In this process, instead of testing their knowledge and competencies through textbooks, children are asked by the teachers to write about their knowledge and experience on various issues related to their daily life and surroundings. Children's experiences and knowledge from these exercises are documented, discussed and analysed by the teachers and the project team to identify issues to evolve context specific teaching-learning methods in different subjects, such as mathematics and language, to further build their knowledge and enhance their competencies.

In the area of teacher training, Sarva Shiksha Abhiyan (SSA) has developed and implemented an innovative four-day training model, "Rupantar", for primary school teachers in the tribal areas of Orissa. The model focuses on attitudinal training of teachers and their sensitization to tribal language, culture and knowledge systems. In the government sector, the Activity Based Learning (ABL) programme introduced by SSA in the primary schools of Tamil Nadu has received considerable acclaim in recent times for its comprehensive and holistic approach in enhancing the quality of education at the school level. The ABL methodology was introduced in response to the poor learning levels amongst children and uninteresting classroom processes. The most notable feature of the reform is its focus on changing classrooms, in terms of methodology, the role of teachers, classroom organization and classroom environment as a whole.

The innovative experiments initiated in different parts of the country present a silver lining to the clouds. The positive and critical awareness from these initiatives need to be documented, shared and widely disseminated, and a perspective and strategy needs to be developed to address the challenges of inclusive classrooms and diversity.

(Author acknowledges support of the DFID for the study project.)

NOTES

1. This narrative is adopted from a research study by Meenakshi Thapan (2006).

2. This experience was shared by the author in her paper presentation at an international conference entitled *School Education, Pluralism and Marginality: Comparative Perspectives*, 2007, New Delhi.

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BOX 1: My Right to Learn

MY RIGHT TO LEARN

Robert Prouty

I do not have to earn The right to learn. It's mine.

And if because of faulty laws

And errors of design,

And far too many places where

Still far too many people do not care – If because of all these things, and more, For me, the classroom door,

With someone who can teach, Is still beyond my reach,

Still out of sight,

Those wrongs do not remove my right. So here I am. I too

Am one of you And by God's grace,

And yours, I'll find my place.

We haven't met.

You do not know me yet And so

You don't yet know

That there is much that I can give you in return.

The future is my name And all I claim

Is this: my right to learn

Quoted in *UNICEF and UNESCO,* 2007.

BOX 2: Inclusive School

THE INCLUSIVE SCHOOL

The fundamental principle of the inclusive school is that all children should learn together, wherever possible, regardless of any difficulties or differences they may have. Inclusive schools must recognize and respond to the diverse needs of their students, accommodating both different styles and rates of learning and ensuring quality education to all through appropriate curricula, organizational arrangements, teaching strategies, resource use and partnerships with their communities. There should be a continuum of support and services to match the continuum of special needs encountered in every school.

Salamanca Framework for Action, 1994

BOX 3: How Inclusion Ought to Work

LORETO DAY SCHOOL, SEALDAH

A school that believes passionately in inclusion

Loreto Day School at Sealdah in Kolkata, West Bengal is an example of an innovative experiment whereby a privately managed school has gone beyond the norm to successfully integrate the schooling of middle class and poor children through a creative and flexible use of pedagogy, curriculum and resources. The school has 1,400 regular students, of which 700 pay fees to provide stability to teachers' salaries, and 700 come from impoverished slums. Children are admitted through a lottery system at the age of four. They learn together, wear the same uniform, and play, work, study and eat together as equals.

Besides the regular school, three other programmes for street children, domestic child labourers and rural children are also run by the school. The Rainbows is a programme for street children. They are allowed to drop into school whenever they are free, from early morning till late afternoon. When they come, they always find a regular student free and prepared to teach them. This is made possible by a creative structure of the curriculum. Regular children have Work Education for two periods a week which ensures that throughout the day there is a reservoir of 50 potential "teachers" free and prepared to teach whoever comes. The street children are brought to a level for a class appropriate to their age and then slotted into school according to her age level.

Loreto children are also encouraged to make contact with domestic child labourers, to play and talk to them, listen to their stories and even interact with their employers to persuade them to get the children to school. Loreto has admitted 239 such children in this way. The regular Loreto children also interact with and teach 3,500 primary school children in rural areas every Thursday (school holiday) in an ongoing child-to-child programme.

The school uses a variety of teaching and learning methods to ensure that all children can learn intelligently in the classroom. Activity-based learning methods and use of local resources are emphasized. The school ensures that all activities are creative rather than money-based so that poor children do not feel excluded because they cannot afford to take part in them. It also provides head start / remedial / alternative programmes to meet the needs of academically weaker children. There is no academic ranking or competition, no pitting children against each other for marks. Children are trained to compete with their own best performances and all prizes are effort-based; talent per se is not rewarded, as it is considered a gift.

Child-to-child tutoring and peer learning in Rainbow, domestic child labour and rural schools programme encourage reflection and enrichment of teaching methods. Children are challenged to reflect on what they do and why they do it, to analyse what they have experienced and become aware of some of the burning socio- economic issues facing Indian society today.

The school is sensitive to the various cultures of the children coming from diverse socio-economic backgrounds and promotes appreciation of and pride in each one. It recognizes the injustices poor children are subjected to and is flexible enough to give them first priority. The school is deeply concerned for the dignity of every child and monitors carefully all existing structures. It removes or re-orients those which might make a child feel inferior. The curriculum encourages children to mix and have relationships with the poor, and exposes them to a variety of life experiences that children from diverse backgrounds bring from their homes or the streets. Even middle class parents understand the educational value of mixing children of several different backgrounds, and parent-teacher meetings are geared towards reflection on various aspects of education rather than reporting on individual children's shortcomings. The school thus exposes teachers, children and parents alike to a variety of socio-economic experiences and issues, and practically makes it possible for everyone to make their contribution in the successful implementation of its vision and purpose.

(*Based on a presentation by Sister Cyrril, Principal, Loreto Day School, in an International Conference organized by Deshkal Society in partnership with DFID, UNICEF, NUEPA and ADRI in 2007 in Delhi.)*

BOX 4: Toolkit for Teachers

Development of a Toolkit for Teacher Education

Development of a toolkit for teacher education on diversity and marginality will be one of the major outcomes at the end of the programme. Thematic issues related to various aspects of diversity and marginality in the classroom, how these are manifested in the teaching-learning and other school-based practices and processes, the relationship and entrenchment of these issues with the larger society are discussed, documented and analysed through fortnightly workshops with various stakeholders such as teachers, parents, children, community representatives, VECs, and Panchayat representatives. The toolkit will focus not only on developing a perspective and explanation which enhances the awareness and understanding of teachers on these issues, but also on developing context-specific practical inputs which help teachers to implement this understanding in actual classroom situations and make classrooms and schools inclusive.

What Inclusion IS About	**What Inclusion is NOT About**
Welcoming diversity	Reforms of special education alone, but reform of both the formal and non-formal education system
Benefiting all learners, not only targeting the excluded	Responding only to diversity, but also improving the quality of education for all learners
Children in school who may feel excluded	Special schools but perhaps additional support to students within the regular school system
Providing equal access to education or making certain provisions for certain categories of children without excluding them meeting the needs of children with disabilities only meeting one child's needs at the expense of another child	

Courtesy: UNESCO(2005), *Guidelines for Inclusion*, Paris

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Education

A STUDY OF JOB SATISFACTION OF B.ED. TRAINED TEACHERS WORKING AT PRIMARY SCHOOLS IN SAHARANPUR DISTRICT

Dr Parsanjeet Kumar*

ABSTRACT

The investigators studied job satisfaction of B.Ed. trained teachers working in primary schools in relation to their teaching effectiveness. Data were collected from 150 B.Ed. trained, Primary school teachers in Saharanpur District. The investigators found positive relationship of teaching effectiveness with job satisfaction. Teachers who were highly satisfied with their jobs were the most effective ones in imparting teaching and those who had low level of job satisfaction were the least effective ones in teaching. In the study, it was also found that female teachers were more satisfied towards their job and lot more effective in teaching than male counterparts.

Keywords: Primary level, Effectiveness, Job Satisfaction, mean score, t-test.

INTRODUCTION

Education in general and primary education in particular, is an essential input in the process of national development. Primary education is the crucial stage of education which lays the foundation for later development. Better primary education requires good teachers. It requires teachers who ought to have high level of satisfaction towards their job and possess effective teaching skill.

The role of teachers in influencing our future is becoming increasingly important. Practically every Commission, which has examined the educational problems of the country, has drawn specific attention to the teachers. *The Education Commission* (1964-66) also gave respectable status to teachers by observing, "*of all the different factor which influence the quality of education and its contribution to the national development, the quality competence and character of teachers are undoubtedly the most significant. Nothing is more important than securing a sufficient supply of high quality recruits to the teaching profession providing them with the best of work in which they can be fully effective"*. According to the *Programme of Action* (POA) (1992), "Teacher's performance is the most crucial input in the field of education. Whatever policies may be laid down in the ultimate analysis, these have to be interpreted and implemented by teachers as much through their personal example as through teaching learning process. Teacher selection and training competency motivation and the condition of work impinge directly on teacher's performance." The teacher is obliged to transplant the best of the knowledge of the subject matter among their students in order to make them better human beings.

The level of job satisfaction depends upon various elements at work that include interalia, the physical condition of work such as working hours, the phenomena of monotony fatigue, incentives, employee behaviour etc. People like to work in an environment which is favorable to his attitude and when he works like that, it is said that he is satisfied with his work. The chief sources of job satisfaction are feeling of accomplishment, recognition and chance of advancement

*** Dr Parsanjeet Kumar** is working as the Principal, Mangalmay Institute, Greater Noida,U.P.
E-mail: principalmimt@gmail.com

while dissatisfaction is related to job context. According to *Dale Yoder* (1963), "A job is collection of duties talks and responsibilities that are assigned to an individual and which is different from other's assignment." Job satisfaction is a widely accepted psychological aspect of functioning in any profession.*Thakkar* (1977) conducted a study of potential teachers' effectiveness and their educational attitudes in relation to their rapport with the students and job satisfaction. It was found that job satisfaction was positively and significantly related to the rapport developed between a student and the teacher. *Olson* (1979) concluded that the criterion of teaching effectiveness contains such components as classroom control knowledge of subject matter and rapport with students. *Shah Beena* (1995) predicted the attitude, intelligence, values, self concept, job motivation, job satisfaction, personality and school climate on teaching effectiveness among the teachers. It was found teaching effectiveness was significantly affected by teaching attitude, intelligence, job satisfaction and school climate. *Pandey and Mukhari* (1999) examined the attitude of effective and ineffective teachers toward teaching profession with reference to their age and experience. It was found that no significant differences between effective teachers having high and low experience in term of their attitude towards their profession exist. *Khatoon and Hassan* (2000) have also shown that job satisfaction does have effect on success in teaching. *Rubina Malti* (2008) conducted a study on teacher effectiveness and values on secondary school teachers. It was found that both the group of the teachers classified as effective and less effective teachers possess almost similar values.

NEED FOR THE PRESENT STUDY

The quality of education and the standard of achievement are inseparably inter- related with the quality of teachers. Teacher effectiveness is very important in education. It is in a teacher's hand to make a student's future bright. Since a teacher will be a role model for the students, the job satisfaction and teaching effectiveness becomes very vital in the field of education. There have been many studies conducted on primary and secondary school teachers, college teachers related to variable like job satisfaction, motivation, occupational stress, accountability organization health etc. But no study has been done on the topic under investigation. Thus the researcher feel the need to investigate the job satisfaction and teaching effectiveness of B.Ed. trained teachers working at primary level.

OBJECTIVE OF THE STUDY

1. To study the job satisfaction of B.Ed. trained teachers working at primary level;
2. To study the teaching effectiveness of B.Ed. trained teachers working at primary level;
3. To find out the relationship between job satisfaction and teaching effectiveness of B.Ed. trained teachers working at primary level;
4. To compare the job satisfaction of male and female B.Ed. trained teachers working at Primary level;
5. To compare the teaching effectiveness of male and female B.Ed. trained teachers working at primary level;

HYPOTHESIS OF THE STUDY

1. There is no significant relationship between job satisfaction and teaching effectiveness of B.Ed. trained teachers working at Primary level.
2. There is no significant difference in job satisfaction of male and female B.Ed. trained teachers working at Primary level.
3. There is no significant difference in teaching effectiveness of male and female B.Ed. trained teachers working at primary level.

METHOD AND PROCEDURE

Keeping in view the objective of the study 150 B.Ed. trained Primary School teachers from 60 government school in Saharanpur district were taken as the sample of the study. The investigator used "*descriptive Survey method"* and *"random sampling"* for the present study. For collection of data the investigator used *Dixit Job Satisfaction Scale* (DJSS) constructed and standardized by *Dr. Meera Dixit(1993)* and used *Teacher Effectiveness Scale* (TES) developed and standardized by *P. Kumar and D.N. Mutha***.** The above scale helped the researchers to identify teachers having more, average and less job satisfaction as well as teacher being most, average and least effective in teaching for analysis the data they were used Arithmetic mean, standard deviation "t" value and Carl Pearson product moment correlation

Result and Discussion:

- **Job satisfaction of B.Ed. trained teachers working at Primary level:** To study the level of job satisfaction of B.Ed. trained primary teachers, three categories of teachers viz. more satisfied, average satisfied and less satisfied with their job were made. The level of teacher's job satisfaction is shown at **Table 1.**

Table 1:Job Satisfaction

Variable	*More Satisfied*		*Average Satisfied*		*Less satisfied*		*Total*	
Job Satisfaction	Number	%	Number	%	Number	%	Number	%
	30	20	85	56.67	35	23.33	150	100

Table 1 Show that out of 150 teachers only 30 teachers i.e. 20% are more satisfied; 85 teachers i.e. 56.67% average; and the rest 35 teachers i.e. 23.33% teachers are less satisfied towards their job.

- T**eaching effectiveness of B.Ed. trained teachers working at Primary level:** To study the status of teaching effectiveness of B.Ed. trained teachers, three categories of teachers viz most effective, average effective and least effective in teaching were made. The status of teaching effectiveness of B.Ed. trained teachers is shown at **Table2.**

Table 2:Teaching Effectiveness

Variable	*Most Effective*		*Average Effective*		*Least Effective*		*Total*	
Teaching effectiveness	Number	%	Number	%	Number	%	Number	%
	32	21.33	78	52	40	26.67	150	100

Table 2 makes it clear that out of 150 B.Ed. trained teachers, only 32 teachers i.e. 21.33% are most effective in teaching; 40 teachers i.e. 26.67% are least effective and almost 78 teachers i.e. 52% are average effective in teaching. Average in teaching-effectiveness are also average in job satisfaction. This finding is supported by the study made by *Thakkar* (1977) where he found that 18% teachers were most effective and 61.27% teachers were average effective in teaching.

- **Relationship between job satisfaction and teaching effectiveness of B.Ed. trained teachers working at primary level:** An important objective of the study required investigators to discover relationship between job satisfaction and teaching effectiveness. For the purposes, the coefficient of correlation was computed to see the relationship between the two variables. The obtained value of the coefficient of correlation has been summarized and presented in the **Table 3.**

Table 3:Relationship between job satisfaction and teaching effectiveness

Variable	*N*	*df*	*Coefficient of correlation*	*Level of significance*
Job satisfaction	150	148	.38	Significant at .01 level
Teaching effectiveness	150			

Table 3 Reveals that the coefficient of correlation between teacher's job satisfaction and teaching effectiveness is positive and significant at .01 levels. It indicates that teachers who are more satisfied with their job have high level of teaching effectiveness. On the other hand, teachers who are fewer jobs satisfied are least level of teaching effectiveness.

The positive relationship between job satisfaction and teaching effectiveness of B.Ed. trained primary teachers can be justified psychologically. One's positive attitude towards profession, working condition, and atmosphere in institutions function as motive force in the life of individual. These make them more effective teacher in the related fields. These contribute to his success in that field resulting into satisfaction with the job being performed. Therefore, it seems quite logical to argue in this way. Teacher's favorable attitude towards profession, working condition, authority and institution may be expected to result into greater effectiveness of teaching. This result of present study has resemblance with the result of the studied conducted by *Shah Beena* (1971) and *Saxena* (1993) where they found that job satisfaction and their teaching effectiveness are positive correlated with each other.

- **Comparison between the job satisfaction of male and female B.Ed. trained teachers working at primary level.** To study the job satisfaction of B.Ed. trained primary school teachers in relation to gender; the data was examined and analyzed. The hypothesis that was framed in this context was that there is no significant difference in job satisfaction of male and female teachers. To test this hypothesis t-test was applied. The difference of mean scores of male and female teachers on job satisfaction was computed and shown in **Table 4.**

Table 4: Gender and Job satisfaction

Group	*N*	*M*	*SD*	$S_{Ed.}$	*"t"*	*Level of significance*
Male teachers	75	22.20	7.85	1.16	3.59	Significant at .01 level
Female teachers	75	26.37	6.35			

Table 4 shows that "t" ratio for the difference in the mean score of male and female teachers is significant at .01 level It means that there is a significant difference in job satisfaction of male and female teachers. The mean value of the teacher's job satisfaction clearly indicates that female teachers are more satisfied towards their job in comparison with male teachers.

The Result obtained appears to be quite plausible. In India, women prefer to work as teachers at primary level. It is less tiring and can be conveniently carried on simultaneously along with various domestic responsibilities that they are expected to perform. Since this is the job that suits them most, most of them remain satisfied. On the other hand, male teachers give priority to other jobs, which bring them more power, prestige and money. Teaching job is said to be the last on their priority list. They go for teaching job only when nothing better is available. Obviously, they should not be expected to be very happy in the job, which is not of their choice. Hence, the significant difference in the levels of job satisfaction between male and female teachers have been oberved.

- **Comparison between the teaching effectiveness of male and female B.Ed. trained teachers working at Primary level:** One of the objectives of the study was to study the teaching effectiveness of B.Ed. trained primary teachers in relation to gender. For the purpose, the "t" value was computed to see the significant difference in teaching effectiveness of male and female teachers. The obtained value of the mean SD and "t" value has been presented in the **Table 5**

Table 5: Gender and Teaching Effectiveness

Group	*N*	*M*	*SD*	$S_{Ed.}$	*"t"*	*Level of Significance*
Male teachers	75	205.13	25.21	3.72	2.90	Significant at .01 level
Female teachers	75	215.92	20.11			

Table 5 show that "t" ratio for the difference between the mean scores of male and female teachers is significant at .01 levels. It means that there is a significant difference in teaching effectiveness of male and female B.Ed. trained teachers. The mean value of the teaching effectiveness clearly indicates that female teachers have higher level of teaching effectiveness in comparison with male teachers.

The finding seems to be logical. It can be argued that being the artifact of Indian culture and social environment,

the teaching job suits the female teachers among various jobs. Hence, the female teachers perhaps have greater teaching effectiveness. For this reason, they have move positive attitude towards the teaching profession. In case of male teachers, the job of primary level teaching is perhaps the last choice. There are other jobs, which they like more. Hence, they are likely to have less favorable attitude towards teaching and hence have less teaching effectiveness in comparison with female teachers.

CONCLUSION

In view of the above discussion, it can be concluded that most of the B.Ed. trained teachers working at primary level are average satisfied towards their job and average effective in teaching. It can also be concluded that job satisfaction generates substantial positive impact on teaching effectiveness of B.Ed. trained teachers and higher level of job satisfaction leads to maximum teaching effectiveness among the teachers. There also exists a positive correlation between job satisfaction and teaching effectiveness. Effective teaching requires feeling of satisfaction. On the other hand, feeling of dissatisfaction affects the efficiency of one's work performance.

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BOOK REVIEW

INDIA IN THE SHADOWS OF EMPIRE: A LEGAL AND POLITICAL HISTORY (1774-1950)

AUTHOR: MITHI MUKHERJEE

OXFORD UNIVERSITY PRESS, NEW DELHI, 2010

Review by *Chander Pal Singh*

Present being the continuation of past, and past being synonymous with history, it follows that history is a part of the present. There is no escape from history wherein lie many of the roots of the problems being faced in the present. *India in the Shadows of Empire* by Mithi Mukherjee argues very convincingly that 1950, the year in which independent India adopted its Constitution, did not mark a discontinuity in many respects and India is still living in the shadows of the British Empire. In other words, independence from the colonial rule did not mark a complete break from the colonial past. At the same time, Mukherjee provides an alternative historical narrative of the British Empire in India and India's struggle for independence under the Indian National Congress and Gandhi. Mukherjee's argument is novel and bold and she goes beyond the existing schools of Indian historiography to bind together the whole of colonial India as well as post-colonial developments with the help of a unifying framework or discursive structure. The present work is bound to become a major landmark in understanding and writing of Indian history and initiate fresh debate in little explored areas of historical and contemporary enquiry.

Being a legal and political history, *India in the Shadows of Empire* focuses on the role of judicial institutions and juridical categories and practices in shaping of India's political history. Mukherjee identifies the dialectic of twin notions of imperial justice as equity and liberty providing a discursive framework for the British Empire in India as well as the anti- colonial representational politics under the Indian National Congress. The discourse of justice as equity was passed on to post-colonial India through the colonial origins of Constitution of independent India and is amply reflected in dynasty-based leadership, fractured and caste- based polity, reservation policy, centralized state planning among other ills.

Mukherjee's central argument is that the British Empire in India was based on two competing and collaborative political discourses: the discourse of the 'colonial' and the discourse of the 'imperial'. Discourse of the 'colonial' implies discourse of governance driven by ideas of territorial conquest, power, violence, domination, and subjugation of the colonized. Whereas the discourse of the 'imperial' was based on supranational deterritorialized discourse of justice under natural law, and was critical and censorial towards the arbitrary exercise of power by the colonial government even as it claimed to speak on behalf of the people of India.

According to Mukherjee, discourse of justice in the British period had its origins in three crucial moments first of which was the famous impeachment trial of Warren Hastings who was tried for high crimes and misdemeanors against the people of India in 1788. Hastings defended his actions in India in the language of colonial discourse of power.

*** Dr Chander Pal Singh** is Assistant Director (Research), Mewar University and author of number of books.

Prosecutorial speech of Edmund Burke representing the case of the people of India put forward the imperial discourse of justice under natural law as the possible basis for British rule in India. India represented by Burke came to occupy the persona of a plaintiff for justice in the House of Lords-the highest court of appeal in British Empire. For the next century and half, Mukherjee argues, this persona of a plaintiff for imperial justice that India was to remain turned to the British Empire as the ultimate judge, until Gandhi brought the discourse of justice to an abrupt end in 1920.

Second moment was the establishment of the Supreme Court in Calcutta in 1774 by the British Parliament. Unlike in Europe, the idea and practice of representation in India did not develop as a legislative-political practice, but developed in and around the British law courts introduced into India in the late 18th century. Supreme Court was established with the specific purpose of serving as external check on the government of East India Company that had come to acquire absolute political and executive power without any external or internal restraint. The Supreme Court had a unique role in India both as the sole legitimate space for the representation of grievances and complaints against the EIC's administration and as the predominant lawmaking or legislative body in the absence of a formal legislature and clearly laid out laws. In its active efforts to restrain the arbitrary exercise of power by the Company's bureaucracy, the Supreme Court in colonial India turned into a site for public critique of power in the name of justice under natural law. Thus Supreme Court helped develop a new culture of lawyer and his client, the judge, the jury and the observing public. In the Supreme Court colonial power was subjected to public scrutiny and was forced to answer to imperial justice in the language of law. The spectacle of high ranking Company government officials being tried in public caught the public imagination and gave the court the notion of justice. Mukherjee makes a very interesting assertion that contrary to common belief that it was the Supreme Court as the theatre of Justice – and not the countless treatises on politics by the philosophers in the West- that emerged as the primary historical source of much of Indian thinking and imaginings about politics and the state. It was under these precise historical circumstances that the figure of the lawyer emerged as the quintessential public representative and no wonder much of the Indian leadership in British India was constituted by lawyers.

After 1857 revolt, the third critical moment according to Mukherjee, the discourse of colonial versus imperial dimmed into background and in its place dialectic discourses of justice as equity and justice as liberty became prominent. Major worry for the colonial rulers was that different communities constituting India, though seemingly hostile to each other, were capable of uniting against the colonial government, making impossible the continuation of Empire in India. If the British Empire was to survive in India, it had to both find a way to overcome its foreignness as a source of provocation for new uprisings in the future and also to dismantle all sources of Indian national unity and identity- cultural, political, and historical- and thus render the very idea of India meaningless. Thus the broad policy of the British government was designed to turn the foreign origin of the colonial state into an advantage and to deny India its national unity and identity. To achieve these objectives, the twin discourse of justice as equity and justice as liberty were introduced.

The first explicit articulation of justice as equity was the Queen's Declaration of 1858 after British crown replaced the East India Company as the ruler of India. Notion of justice as equity was opposed to the concept of justice under the natural law. It was grounded in the conscience of the monarch. Monarch was the source of all justice, compassion and mercy. Courts administered justice on the ruler's behalf and not as impersonal system of justice. In notion of justice as equity, it was implicit that India was society of warring communities that needed an outside force to rule over it. Torn by internal conflict, India was in urgent need of a neutral and impartial power at the helm of the state to secure both justice and order. It was implicit that only an alien foreign power could be trusted to be neutral and impartial. In this discourse, India in itself was a society in chaos without a being or identity. The Empire alone with its foreign origin could confer unity and identity on it. A divided Indian society needed a foreign imperial government more than British itself needed a colony in India. It was only as a colony that India could be itself.

If Justice as equity justified the permanence of the British rule in India, Justice as liberty allowed the British Empire to present itself on a pedagogical mission whose ultimate objective was to take India in the direction of self-government. This new dialectic of the twin discourses of justice as equity and justice as liberty replaced the earlier dialectic of the colonial and the imperial, even as they incorporated much of the substance of the earlier discourses.

Categories of justice, equity, and liberty deployed in post-1857 India were anchored in the figure of the Queen. It was as subjects to the principles of *'liberty, equity, and justice*' that India became subject to the British monarchy. Reverse was as true.

Marxist and Nationalist schools see Indian National Congress as the first nationalist organization on an all India scale. But Mukherjee argues that it was on the basis of the imperial discourse of justice as equity and liberty that the INC developed an anti-colonial discourse and movement. Indeed it was in the early Congress; faith in the inherent justice of

the Empire and its promise of liberty that its opposition to colonialism was grounded. The goal of Home Rule movement that Congress launched in its most radical phase before Gandhi took on the political leadership was not the same as the demand for national freedom, because home rule, in so far as it sought legislative powers within the Empire, assumed the ultimate sovereignty of the British monarch. Mukherjee emphasizes the point that as far as the Congress was concerned; it was not as citizens of India that Indians were going to become free, but as citizens of the Empire.

With the emergence of Gandhi, a political breakthrough was achieved, both in the form of a demand for complete national independence rather than imperial justice, and in launching of a mass movement as opposed to the politics of elite pleading and petitioning.

In the post-1857 India, portrayed by the British Empire as a society deeply and permanently fragmented, each community found itself to be in minority, always afraid that in the event of national independence and the departure of the British Empire it would become vulnerable to domination by other more powerful communities. This development undercut the very possibility of a discourse of political freedom in India, because only a group that could hope to constitute a majority and govern a democratic polity in free India would have the incentive to fight for national independence under the discourse of political freedom. British policy was designed precisely to prevent such a majority from emerging. The colonial hope was that this fragmentation of Indian society into innumerable minorities would keep it trapped in the discourse of imperial justice with no access to the discourse of political freedom, thereby making the British Empire permanently indispensible to Indian society.

It was under the Gandhian leadership that anti-colonial movement was able to break out of the trap laid earlier. The author contends that Gandhian teleology of freedom was different from the western discourse of political legislative freedom based on the ideas of national identity, nation state, private property, and individual rights or in nutshell, ideas of individual and collective self or identity. Gandhian ideas of freedom (*renunciative freedom* according to Mukherjee) were derived from ancient Indian tradition like Upanishads and the Gita where the objective of the human life was to rise above selfish identities and ultimately attain the *moksha* or communion with the higher Self. Gandhi was himself a part of the historical legacy that developed in the wake of encounters between Indic and Western discourses and traditions of freedoms in the colonial period. Immense appeal of the Gandhian mode of politics compelled the Congress to suspend its own teleology of imperial justice and work towards national independence. But Gandhian discourse of renunciative freedom was unequipped and unwilling to offer a legislative discourse of governance to the new state of independent India. Gandhi had rightly called upon Congress to disband itself as a political party after independence was achieved but Congress could not forget its original and essential nature of being grounded in imperial justice of equity.

After the independence, Gandhian discourse of renunciative freedom receded into the background. As the reins of the government fell into the hands of the Congress, it resurrected the temporarily suspended discourse of imperial justice as equity as the discourse of the governance and made it the foundation of the Indian constitution. This was only natural because Indian Constitution was a natural culmination of the constitutional reform process which started after 1857 in the form of Act of 1861, and evolved into the Acts of1892, 1909, 1919, and 1935. Mukherjee cites Dr. Ambedkar among others to prove that most of the provisions of Indian Constitution were lifted from the Government of India Act of 1935 without changing a comma. The other element of the legacy of justice as equity, the imperial monarch, soon reproduced itself in the dynastic leadership of Indian National congress, represented by the Nehru-Gandhi family, continues even today. That framers of Constitution did not look into Indian tradition is well known but Mukherjee emphasizes the point that in sharp contrast to Western constitutions based on the category of freedom, anchored in collective identity or individual property, the Indian constitution was grounded in the category of justice as the sovereign legislative principle. Moreover, what is most shocking is that founding fathers did not publically debate or discuss the philosophical foundations of Indian Constitution at all.

India in the Shadows of Empire by Meethi Mukherjee can be regarded as a logical extension of the work started by Bernard Cohn, her mentor at the University of Chicago. The main text is accompanied by very useful and comprehensive bibliographic notes as footnotes where Mukherjee analyses alternative readings and approaches in perspective. Thirty six page long bibliography at the end of the book hardly leave any relevant source. The book is recommended to all those who are willing to have a fresh look at India's colonial past and also the present.