

# DISHA!

The voice of a resurgent Odisha

Issue 2011

## HERITAGE CONSERVATION

Restoring Odisha's rich heritage

## BIJUBABU

The picture of the man as a leader, patriot, friend and humanitarian

## BRIGHTENING LIVES - THE VEDANTA WAY

How the Vedanta Group is bringing light into Odisha's lives - literally

## POETRY IN MOTION

The legendary Guru  
Kelucharan Mohapatra

# ODISHA

A MANY-SPLENDoured STORY



O-Disha' has been published by Bibek Chattopadhyay on behalf of the Vedanta Aluminium Limited (VAL). The opinions / views expressed in the magazine are those of the respective authors and do not reflect or imply those of the editor, VAL or their agents. This magazine is meant for private circulation only.

Readers are most welcome to mail feedback on magazine to [communications@vedanta.co.in](mailto:communications@vedanta.co.in)



# ODISHA

## EXTENDING BOUNDARIES




---

**The long term, spatial positive impact of industry can neither be ignored nor questioned. Industry provides the stimulus for prosperity which, in turn, extends to different walks of life.**

---

The resurgence of a state is possible only when its people take cognizance of and pride in the richness of its culture, utilise its natural resources responsibly and invoke self-belief. Odisha has embarked upon that process and it is only a matter of time before the world witnesses its revived glory.

The Vedanta Group is honoured to play a significant role in this historic transformation. Industrialisation is a social and economic process. No industry can afford to operate for the sake of investment return alone. The long term, spatial positive impact of industry can neither be ignored nor questioned. Industry provides the stimulus for prosperity which, in turn, extends to different walks of life.

The first issue of O-disha magazine convinced us that this is the right platform to highlight the structural and fundamental shift transpiring through Odisha. Our conviction was validated by an overwhelming response from our readers.

I am delighted to present the second edition of the Odisha magazine. This issue has been crafted aligned with the fast-evolving character of the State, raising hope and optimism; the old yielding to

the new and experience blending with dynamism.

We owe the success of this magazine to the invaluable contributions, direct and indirect, by eminent Odia personalities. I am positive that their continued support will help carry it forward.

I would be pleased to receive your comments on this issue.

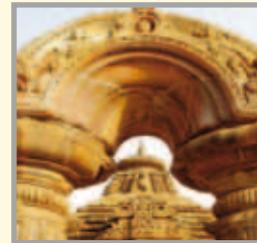
Sincerely,

Anil Agarwal  
Chairman, Vedanta Group

ISSUE 2

Executive editor: Mudar Patherya  
Editorial team: Dr. Itishree Devi,  
Vedanta Aluminium Limited  
Editorial contact:  
communications@vedanta.co.in

4



**HERITAGE CONSERVATION**

Restoring Odisha's rich heritage

8



**BIJUBABU**

The picture of the man as a leader, patriot, friend and humanitarian

12



**BRIGHTENING LIVES - THE VEDANTA WAY**

How the Vedanta Group is bringing light into Odisha's lives - literally

16



**POETRY IN MOTION**

The legendary Guru Kelucharan Mohapatra profiled by Sujata Mohapatra

18



**GOING HIGHER ON THE EDUCATION LADDER**

Professor Chitta Baral speaks about Odisha's resurgence as a destination for world-class higher education

22



**DONGRIA KONDHS**

A peek into how one of India's oldest inhabitants are preparing to enter mainstream society. An article by Professor A. B. Ota

24



**RAGHURAJPUR**

How an ancient art form survived the test of time

28



**QUEST FOR UNIFICATION**

An interview with the renowned international physicist Professor Jogesh C. Pati

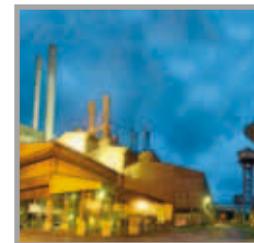
32



**JOURNEYS THAT CLEANSE AND UNITE**

Jatras of Odisha bring its people together. An article by Subhra Priyadarshini

35



**THE IMFA STORY**

Subhrakant Panda talks about IMFA's success story

38



**VEDANTA FOUNDATION**

Providing opportunities, transforming destinies

42



**BATTLING SICKLE CELL ANAEMIA**

A profile of the doctor leading the fightback - Dr. Dipika Mohanty

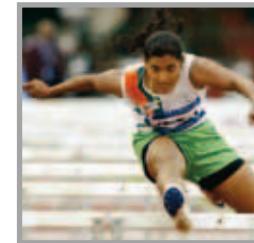
44



**ODISHA'S MINING INDUSTRY**

Observations by Nilmadhab Mohanty and others

48



**ADORNING THEIR SPACE**

Odisha's young women sports achievers

50



**KISS OF LIFE**

Reshaping lives at Kalinga Institute of Social Sciences.

54



**DHAMRA PORT**

What makes this a model infrastructural showpiece? An interview with Mr. Santosh Mohapatra

58



**INVEST BHUBANESWAR**

A symposium on investment in Odisha for international players. A report by Dr. Dhanada Kanta Mishra

60



**READERS SPEAK**

# TAKING A RICH PAST INTO A SECURE FUTURE

HOW THE ARCHAEOLOGICAL SURVEY OF INDIA IS HELPING PRESERVE THE RICH, CENTURIES-OLD HERITAGE OF ODISHA FOR GENERATIONS



**A**N INDEX OF HOW EFFECTIVELY a race of people can leverage its present and create an exciting future is derived from how they respect their past.

The year 1078. Kalinga (present-day Odisha) is one of the dominant maritime powers in the world. The foundation of this lies in Kalinga's metallurgy technology. The combination makes Kalinga a prosperous global trader. Towns emerge. Temples are built. Culture flourishes.

The year 1990. Odisha is far behind on the development front. Unable to hold its own across any industrial segment. Intellectual capital migrating. Dilapidated cultural landmarks.

Odisha's choices were clear. Move with sensitive urgency and arrest the decline of the State's historical edifices dating back

to the 3rd century B.C.

"At the Archaeological Survey of India, we recognised that it was imperative to step in and stem the decline" says Dr. Sushant Kar, archaeologist. "We realised that restoring these temples and other centuries-old monuments with urgency would be one of the most effective ways to inspire visions of an age-old glory and send the message of hope out to a resurgent Odisha."



Easier said than done for a number of reasons. Saline seawater had eroded most structures. The protective lime plaster had absorbed rainwater. Iron clamps had rusted. Walls had cracked. Rehabilitation at functional temples was made further difficult as devotees could not be evacuated.

One of the first temples the Archaeological Survey of India addressed was the Jagannath Temple in Puri, starting 1975. The landmark Vaishnava Temple, dedicated to the trinity (Jagannath, Balabhadra and Devi Subhadra), was commissioned by Ananta Varman Chodaganga Deva, the illustrious king of the Ganga Dynasty in 12th century A.D.

The edifice is the grandest surviving shrine of Odisha (66 m), desperately in need of repair: the structure and

subsidiary shrines were covered with numerous coats of heavy lime plaster, obscuring carvings. The lime coat plaster had become spongy and porous, developing leaks. In turn, this accelerated the rusting of the iron clamps and dowels, which enhanced their volume and resulted in cracks. The combination of lime plaster weight and the structural damage weakened the underlying stone.

The Archaeological Survey of India embarked on conservation in 1975 using measures as per archaeological norms. The ASI's Science Branch leveraged its decades-old understanding of material deterioration, intervention technologies, material studies and diagnostic technologies, arriving at the following strategy regarding chemical preservation: it would use only effect-reversing materials (eliminating any chance of damage to monuments); openly consider a future intervention should it become necessary; maximise the retention of historical material harmonised with the original design and workmanship (colour, tone, texture, form and scale); ensure that the new additions did not dominate over the original fabric.

The lime plaster thickness over the sanctum sanctorum was a maximum 45 cm. Plaster was broken from the wall with chisels and wooden hammers. Close to the stone surface, hammering was stopped and the rest of the plaster was removed by hard pressure with chisels.

**The result of a 17-year exercise:** the deplastered surface revealed rich sculptural and architectural wealth including 24 Vishnu forms carved on either side of pilasters of the Parsva devatas shrines. Similar operations were undertaken in the Narasimha, Surya, Ganesha and Vimala temples in the temple complex.

"The turnaround of the Jagannath Temple received a big boost when the Biju Patnaik government gave considerable importance to strengthening the

structures of the Kalingan temples," says Dr. Sushant Kar, archaeologist, ASI. "The original iron clamps used to hold the structures together were replaced with stainless steel clamps. By combining this with the deplastering, we can safely assume that the decline of Jagannath Temple has been arrested."

**The result:** today, it continues to be a fully functional place of worship and is one of the most important pilgrimage destinations for worshippers of Lord Krishna or Lord Vishnu around the world. It is open throughout the year and has a reputation of receiving over 100,000 pilgrims on important festivals. It is famous the world over for hosting the annual Rath Jatra or Chariot Festival.

## Turning the Konark Temple around

**T**HE KONARK TEMPLE IS more than just an Odishan showpiece, it is a national asset.

Built in the thirteenth century, the Konark Temple was conceived as a gigantic chariot of the Sun God with 12 pairs of exquisitely-ornamented wheels dragged by seven rearing horses. The temple comprised a sanctum with a lofty (presumably over 68 m high) *sikhara* (tower over sanctum sanctorum), a *jagamohana* ((prayer hall) 30 m square and 30 m high) and a detached *nata mandira* (hall of dance) in the same axis, besides numerous subsidiary shrines. Majestic in conception, this temple is indeed one of the most sublime monuments of India, notable as much for



its imposing dimensions and faultless proportions as for the harmonious integration of architectural grandeur with elegance.

The Konark Temple, built on the banks of the Bay of Bengal, was completed some time in the 13th century by Narasimha I and for the first few centuries, the presiding deity was worshipped (14th century inscription on the temple assigns rituals to various temple officials).

Famous historian Abul-Fazl referred to this temple glowingly in his *Ain-i-Akbari*; European sailors referred to it as the Black Pagoda and Juggernaut Pagoda.

However, the saline air, monsoonal fury and marshy foundation took their toll. The main temple collapsed even as older temples at Puri and Bhubaneswar survived without major decay.

Twentieth century archaeologists set about arresting the decline of one of India's most prominent landmarks. "To prevent the Jagmohan porch from collapsing, the British filled it with sand to provide a solid base," says Dr. Jeevan Patnaik. "Besides, the ASI leveraged some technological advancements and traditional preservation methods using organic substances (molasses and oyster shells) instead of cement." It applied the technique of grouting – to fill up voids and cracks in the walls – imitating the original structure of the temples to the greatest extent possible. However, given that the nature of problems faced by the temple structure are natural, i.e. salt-laden winds, erosion and water logging, and of a perennial nature, conservation efforts had to be sustained throughout to avoid further damage and deterioration.

In 1984, the temple was selected as a World Heritage Site by UNESCO in due recognition of its 'outstanding universal value', and its uniqueness as a heritage of mankind. According to UNESCO, inclusion on the World Heritage List is a catalyst to raise heritage awareness on the part of governments and citizens alike.

### A growing ASI influence

The Archaeological Survey of India (ASI), under the Ministry of Culture, is the premier organisation for archaeological research and protection of cultural heritage. The prime responsibility of the ASI is the maintenance of ancient monuments and archaeological sites, as well as the regulation of all archaeological activities in the country as per the provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958. It also regulates the Antiquities and Art Treasure Act, 1972. The organisation employs trained archaeologists, conservators, epigraphists, architects and scientists for conducting archaeological research projects through its Circles, Museums, Excavation Branches, Prehistory Branch, Epigraphy Branches, Science Branch, Horticulture Branch, Building Survey Project, Temple Survey Projects and Underwater Archaeology Wing.

The ASI operates in Odisha through the Bhubaneswar Circle. Its functions include the exploration of archaeological sites, documentation of loose sculptures, excavation of archaeological sites, conservation and maintenance of protected monuments and basic amenities at monuments for tourists.

The ASI's excavated sites reveal aspects from as far back as the 3rd century BC and represent a significant part of India's religious heritage. It tracks the birth and growth of some of India's major religions. For example, Buddhism evolved during the Mauryan rule in Kalinga, particularly during the rule of Ashoka the Great, around 260 B.C. A century later, Jainism found its roots in Odisha under King Kharavela of the Chedi dynasty. In the eleventh century A.D., the Eastern Ganga dynasty erected several temples, devoted primarily to Lord Jagannath, throughout the region. Such excavations allow the creation of a chronological study of significant religions and sects in the country.

Currently, the ASI is undertaking the

preservation of the Ranipur and Jhariyal monuments, known for the religious confluence of Shaivism, Buddhism, Vaishnavism and Tantrism, in addition to the regular conservation, preservation and maintenance of all historical sites.

### Sites excavated by ASI

**Ratnagiri:** The Chinese traveller Huien Tsang first identified the Golden Triangle, comprising Ratnagiri, Lalitgiri and Udayagiri. His writings provide documentary evidence of the roots of Buddhism in India. The excavation of this site brought to light the remains of a magnificent Buddhist establishment comprising a stupa, monastic complex, shrines, votive stupas, myriads of sculptures, architectural fragments and other antiquities hitherto unparalleled in Odisha and comparable to the well known Buddhist site of Nalanda. On the basis of the ceilings bearing the legend 'Sri Ratnagiri Mahavihariya Arya Bhikshu Sanghasa,' the place was identified as Ratnagiri.

**Udayagiri-Khandagiri:** These magnificent caves were built around the 2nd century during the reign of King Kharavela of the Chedi dynasty. They contain one of the earliest groups of rock-cut monastic caves of the Jains. The wall inscriptions of some of the caves are practically the only source of knowledge of the existence of a powerful dynasty of the Chedis. Cave 14 (Hathigumpha) of Udayagiri bears an inscription recording the war achievements of Kharavela. The record also mentions the repaired cyclone-devastated fortification of Kalinga nagara (Sisupalgarh), the return of the Jina of Kalinga once taken away by the Nandas to Magadha and a massive stone structure on Kuman Hill (Udayagiri) where caves for Jain monks were excavated. Certain caves in Udayagiri have Buddhist inscriptions as well. The ASI carried out extensive repair in these caves in the 1960s.

**Lalitgiri:** The archaeological excavation of the site yielded the remains of four monasteries. According to Huien Tsang's writings, Lalitgiri is the oldest Buddhist site in Odisha. A part of the Golden Triangle, its excavation revealed remains of a number of stupas and stone sculptures of the Buddha in different poses. The discovery of relic caskets was the first of its kind in eastern India. Within the stone container, a steatite, a silver and a gold casket inside one another were also recovered. The ASI recovered most of these artefacts and put them on display at the Archaeological Museum, Ratnagiri.

**Barabati Fort:** King Anangabhima III C 1211-1238 A.D) of the Ganga dynasty was mainly responsible for the construction of this huge square fort (102 acres) with a laterite-lined moat. The excavations revealed structural remains of a temple, citadel, architectural pillar fragments, columns and other antiquities dating from the thirteenth century to eighteenth century.

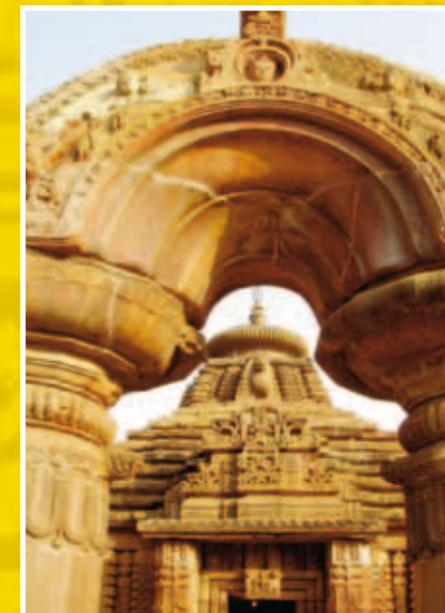
## Rajarani Temple

**R**AJARANI TEMPLE, or the 'Love Temple' derives its name from the red-gold sandstone used for its construction, a stone known locally as Rajarani. Fabulously



ornate, the temple tower is famous for its artistic spires and sculptures of beautiful female figurines engaged in activities like holding children, looking in mirrors and playing with birds. On the lower register of the tower are the sculptures of eight guards. Beginning from the left of the entrance to the tower and proceeding in a clockwise direction, there are the sculptures of Gods like Indra, Agni, Yama, Nirriti, Varuna, Vayu, Kubera and Ishana (Shiva), all of which are stupendous. Built in the 11th century, the Rajarani Temple is notable for the absence of a presiding deity and the fact that no pujas are performed in the temple.

## The Mukhteshwar Temple



**T**HE MUKHTESHWAR TEMPLE, BHUBANESWAR'S smallest and prettiest temple, was built in the 9th century and set in flowering gardens, tucked away in a quiet residential area. A few of this temple's features signal the start of a new era in Odishan temple architecture; for example, it has a higher *jagamohan* (porch) roof and its red sandstone body is encrusted with intricate carvings from emaciated, crouching *sadhus* to voluptuous, buxom women bedecked with jewels. Monkeys illustrate folk tales from the famous Panchatantra around the windows in the jagamohan, and impressive lions jut from its spire. The Mukhteshwar's most distinctive feature is its torana, a thick-pillared, arched gateway draped with carved strings of beads and ornamented with statues of smiling women in languorous positions. The compound also houses the Siddheswara and the Kedar Gouri Temple, with its 8-foot-tall statue of Hanuman, the monkey god.

There is a tank within the temple premises used by devotees – a popular belief is that tossing a coin inside will make all wishes come true!





# BIJUBABU

What was the legendary Biju Patnaik like? The picture of the man as a leader, patriot, friend and humanitarian. Served as Chief Minister of Odisha from 1961-63 and 1990-95.

“To be born poor is not a crime but to remain so is indeed a crime.”

“Be loyal not to me but to the destiny of the State.”

“If a thing can be done now, do it at once and do not defer it to the next day.”

“Be the pride of your state, not a shame.”

## TRIBUTE

### Hands-on

BIJU PATNAIK WAS ATTENDING A conference of the Association of College Teachers of Non-Government Colleges of Odisha at Christ College (Cuttack) when the sound system failed. The Chief Minister immediately got off the rostrum, examined the sound system, made it functional, went back to his chair and waited for his turn to speak.

### Open-minded

IN THE SIXTIES THERE WAS A proposal to hold the annual session of the Indian Science Congress under the auspices of Utkal University. Immediately, the Chief Minister's office called a meeting of the Vice-Chancellor and other officials to discuss how they should go ahead. Vice Chancellor Dr. P. K. Parija (Biju Patnaik's teacher) raised a technical point: how could Bijubabu's office call the conference when it was the responsibility of the University to do so. Bijubabu got the point; he asked all concerned to assemble at the University within 30 minutes for a meeting to be conducted under the Chairmanship of the Vice-Chancellor. Bijubabu made himself available as a mark of respect to his teacher.

Odisha was undergoing a resource crunch in the Nineties. As head of government, Bijubabu issued a directive related to the restrictive use of government vehicles, particularly on Sundays and public holidays. Bijubabu led by example; Bhubaneswar citizens were surprised to see the Chief Minister riding a bicycle or cycle rickshaw to reach the Secretariat on holidays. “Example is better than precept” he would say.

An unemployed young man once demanded a job from Bijubabu while he was Chief Minister. A heated argument ensued. Bijubabu slapped the young man

in disgust. The young man retaliated but was overpowered. Surprisingly, Bijubabu patted the young man, invited him to his office room, gave him ₹1,000, offered him a job and concluded that if all the young men in Odisha possessed similar courage, then the state would make considerable progress.

### Optimistic

BIJU PATNAIK'S ROLE model was Napoleon and like the latter, he deleted the word ‘impossible’ from his dictionary.

### Sensitive

BIJUBABU WAS CLEARLY IN TOUCH with the harsh realities of the vast Odisha hinterland. Whenever he required, he would call villagers to Bhubaneswar for their suggestions. The result was that he announced an increase in the basic minimum wage of a labourer from ₹10-12 (in the Adivasi-dominated Koraput district) and ₹15-20 a day (in coastal Odisha) to ₹25 a day. He was widely ridiculed for this decision but the current rate of minimum wage is indicative of the foresight of a man whose primary concern was the welfare of the people.

Biju Patnaik implemented his scheme of panchayat industries for the socio-economic development of rural areas. Several industries – medium and small – came up throughout the State. This was an innovative scheme of rural development and Jayaprakash Narayan came to study this scheme. It was rightly said – “If Balwant Rai Mehta is the father of Panchayati Raj, then Biju Patnaik is the father of Panchayat industry in India.”

### Adventurous

WHILE IN HIS THIRD YEAR AT Ravenshaw College, Bijubabu left for Peshawar on a bicycle. He stayed back in Delhi to become a pilot – probably the first or second ‘C’ class pilot from Odisha. Bijubabu became a pilot with a private airline and sneaked into the Royal Air Force for sorties across Europe during World War II. Stalingrad was encircled by the Nazis; the Red Army was desperate for reinforcements. Bijubabu volunteered to make 27 sorties, dropping weapons beyond enemy lines. This fact remained unknown for 50 years, until representatives of the Allied Forces (the USA, the UK and Russia) felicitated him for bravery.

■ Biju Patnaik was nothing if not daring. Despite being the personal pilot of Lord Wavell, Viceroy of India, his loyalty lay with Indian freedom fighters and he would transport the legendary Aruna Asaf Ali – escaping the notice of the British – in the cockpit from place to place.

■ Eventually, the British got wind of this and imprisoned him in the Red Fort and Delhi Central Jail.

■ Bijubabu was a follower of Haldane's words ‘Life without adventure has no charm’ and joined the Royal Air Force as a pilot even before completing his B.Sc. final.

### Direct

IN OCTOBER 1971, WHEN THE ODISHA administration was benumbed by a killer cyclone and tidal waves that flattened coastal Odisha, Bijubabu pressed a private aircraft into service and personally engaged in dropping food packets to the marooned thousands who would otherwise have perished.



**Gutsy**

IT WAS OCTOBER 1947. THE PAKISTAN Army was only a few kilometres from Srinagar airport. The Indian Air Force expressed its inability to land there fearing that the control tower would, by then, be in enemy hands. Pandit Nehru asked in despair: “Is Kashmir then lost forever?”

That is when Biju Patnaik stepped in. He flew an aircraft, landed at the airport, took over the control tower, landed the first platoon of troops and enabled the Indian Air Force to step in thereafter.

Kashmir was saved.

On one occasion, communal violence broke out in Rourkela, the steel city of Odisha. As soon as he received information, Bijubabu reached the city and location. He was not content to lead or negotiate from the sidelines; he proceeded on foot to meet the mob. The police tried to dissuade him but Bijubabu was undeterred and helped rein the mob in from causing further trouble.

**Bhumiputra**

BIJU PATNAIK WAS ON HIS WAY TO Indonesia, when Pandit Nehru asked him to meet the national leaders of that country like Dr. Mohammed Hatta (Vice President of Indonesia), Sukarno and Shariahar.

Bijubabu took off in an old fashioned Dakota to Djakarta where the rebel headquarters were located. In Singapore, he received a message from the ruling Dutch government threatening to shoot his aircraft down if it entered Indonesian

airspace. “Resurgent India does not recognise Dutch colonial sovereignty over the Indonesian people. If my aircraft is shot down, every Dutch plane flying across the Indian skies will be shot down in retaliation,” replied Biju. He also dashed off a message to Prime Minister Nehru: “Take necessary steps should my aircraft be shot down”.

Bijubabu landed on an improvised airstrip and then, using leftover petrol from abandoned Japanese military dumps, eluded the Dutch to land in Djakarta. Even as the Dutch forces attempted to re-occupy Indonesia, Bijubabu flew out with Indonesia’s first Vice President Dr. Mohammed Hatta (dressed as a cook) and Sutan Sjahrir (first Prime Minister of Indonesia) for holding talks with Pandit Nehru and Sardar Patel.

In gratitude, Bijubabu was offered an Indonesian island, which he politely declined. Indonesia also declared him Bhumiputra (son of the soil) with the assurance that anytime he wished for anything he would need to simply ask for it. On the occasion of that country’s 50th Independence Day in 1995, Bijubabu was decorated with Bintang Jasa Uttam (First Class Star of Decoration), the highest honour accorded by Indonesia.

Years later, Bijubabu leveraged this deep connect with Indonesia. During one of the conflicts with Pakistan, the latter country sought the assistance of Indonesian submarines. The Indian government pressed Bijubabu to fly to Indonesia and convince its government to reverse the

decision. When Bijubabu reached Djakarta a storm had unfolded. Bijubabu requested for an immediate audience with President Sukarno. Since Mrs. Sukarno was in labour, the President agreed to meet Bijubabu the following morning. Bijubabu persisted. Sukarno agreed. Bijubabu presented his request: recall the submarine fleet. But they have already sailed and must have reached Pakistan waters, said Sukarno. Bijubabu said: “I am Bhumiputra, I am asking this request for my country and my people”. Sukarno relented; a wireless message turned the submarine fleet back. That night Sukarno’s wife gave birth to a girl, whom Bijubabu christened ‘Meghavati’ (in view of the ongoing storm). The baby went on to become the President of Indonesia.

**Friendly**

BALAMUKUNDA MISHRA WAS A longstanding friend whose son was stabbed to death by an anti-social. Balamukunda approached Bijubabu for a job for the widow. Bijubabu could not recognise Balamukunda who he was seeing after many years. Balamukunda reminded Bijubabu of how they had once travelled together from Cuttack to Konark, during which Bijubabu had swallowed 17 eggs at Nimapada. Bijubabu jumped and immediately embraced Balamukunda, requested him to stay at his residence whenever he came to Bhubaneswar, donated ₹1,000 and arranged for a job to rehabilitate the widow.

**Progressive**

AT THE INVITATION OF BIJU Patnaik, internationally respected biologist, scientist and philosopher Prof. J. B. S. Haldane accepted the post of Director of the Biometry and Genetics Laboratory at Bhubaneswar. Prof. Haldane became an Indian citizen in 1960 and catalysed the development of science in India. The reason why he accepted Bijubabu’s request was “because he was capable of displaying great respect towards individuals whom he considered to be undertaking constructive work”.

**Patriotic**

BIJUBABU WOULD OFTEN STATE: “Odisha was the greatest empire of India; it has now become a small place. Its army defeated Alexander’s army and threw them across the border of India. Kalinga was the largest maritime power in the world. What better dream can I have than dream of those magnificent days: when Odisha was vital, when Kalinga was the greatest empire, when Kalingan sailors did not know fear and when Kalingan mothers were known as ‘biranganas’ (heroic women).”

■ When Biju was a student, he was assaulted by the police for the audacity to rush towards Gandhi for a closer look. This resulted in profuse bleeding, which made him somewhat of a nationalist. “This event created a spirit of revenge against British colonialism,” said his brother George, an eye-witness.

**Pilot**

THE CHILD BIJU WAS FASCINATED by aeroplanes. When a small aeroplane landed at Cuttack’s Killa Fort, he ducked school merely to go and touch his dream object (he was chased away by the police!).

When the Second World War broke out, Biju Patnaik joined the Royal Indian Air Force, along with British friends who, like him, had learnt the rudiments of flying at the Delhi Flying Club. Bijubabu helped evacuate British families from the advancing Japanese and flew supplies to revolutionaries in Chiang Kai Shek’s China.

Interestingly, despite being an RAF pilot, Bijubabu remained a nationalist. While flying soldiers across locations, he dropped bags of Gandhi’s Quit India leaflets. While flying the British to safety from Yangon, he air-dropped leaflets supporting the cause of Netaji’s Indian National Army. While on leave, he ferried freedom fighters to secret meetings. As head of the Air Transport Command of the Royal Imperial Air Force, he sheltered prominent freedom fighters like Jayaprakash Narayan, Ram Manohar Lohia and Aruna Asaf Ali. “When the British authorities found out, they nearly got me shot for subversive activities,” he recollected.

**Practical**

BIJU PATNAIK WAS PERHAPS THE only political leader who dispensed with his security personnel. He was addressing a press conference as Chief Minister following an attack on him by Secretariat employees. The question: ‘Since you knew

there was danger to your life by striking employees, why did you not seek police protection?’ Bijubabu replied, “Today as Chief Minister I can requisition hundreds of policemen to protect me. But when I am in the Opposition who will help me if an attack is made on my life? He categorically pointed out that the best protection would be the people. The result: he travelled inside and outside Odisha without security. When in Kolkata, Chief Minister Jyoti Basu sent a police car to bring him from Utkal Bhavan to Writers’ Building. Bijubabu returned the police security and proceeded alone.

**Visionary**

BIJU PATNAIK PROMOTED the first textile mill in Odisha (Orissa Textile Mill). The first tube factory (Kalinga Tubes). The first refrigerator factory (Electrolux). The first low-staff furnace in India (Kalinga Iron Works).

*Source: The book Legendary Biju – The Man and Mission by Major K. P. Mohanty. Contributors also include B. C. Rout, Shridhara Nath Srichandan, Dr. Shridhar Charan Sahoo, Dr. Saroj Kumar Patnaik, Dr. Pabak Kanungo, Gour Mohan Sarangi, Dr. Jogesh Rout, Girija Bhusan Patnaik, Bhagabat Prasad Mohanty and Banka Bihari Das*



# BRIGHTENING LIVES THE VEDANTA WAY

Odisha was an interesting paradox until a few years ago.

The state accounted for 24.4% of India's coal deposits, the largest in India, on the one hand and a per capita power consumption of 664.70 units, on the other.

The inference was obvious: Odisha was rich but only in name. The state could scarcely utilise even its own resources.

Then something happened. The Electricity Act 2003 provided a new incentive for intending Indian power generating companies: an increase in the return on

equity from 14% to 15.5% for existing plants 2009-10 onwards; increase in depreciation to 5.28%; provision for an increase in operation and maintenance expenses; a provision to trade power across geographies.

Suddenly, everyone started turning around to give Odisha a second glance.

**The result:** until 2007, Odisha had commissioned 3,733.31 MW in power generation capacity; between 2008 and 2011, Odisha added 1,530.32 MW; between 2012 and 2017, the state is expected to generate 52,000 MW.

"There has been a sea change in the positioning of Odisha over the last decade: from a power-starved state to one that is expected to emerge as the power capital of India," says Mr. Pramod Suri (CEO) Aluminium Business Operations (VAL).

## Opportunity

The Vedanta Group is making this transformation a reality. With good reason. Power is integral to the Vedanta Group's leading business: for instance, about 14,000 units of power are required to produce one tonne of aluminium. When the Vedanta Group acquired BALCO (Chhattisgarh) in

2001, the Company received 270 MW of captive power generation capacity bundled with it. Being forward-looking, the new BALCO management ventured to add 1,740 MW over the next 10 years, reinforcing its understanding of power generation, asset commissioning, management and expansion.

"As an industrial Group, we could have been complacent with our efforts," says Mr. Suri. "However, we decided to venture one step ahead. We said 'Why not leverage this Group's intellectual capital and commission more such power plants for the benefit of the people, state and country?'"

And this is what transpired: the Vedanta Group embarked on a business blueprint to

commission 2,400 MW of fresh generating capacity through Sterlite Energy in Odisha and another 1,215 MW through Vedanta Aluminium.

The industrial companies of the Vedanta Group would not only commission large metal production capacities – their core business – but would also back-end these metal capacities with more-than-adequate power generation capacities. "The Group's objectives: become completely self-sufficient for existing and projected power needs; create additional capacity to market surplus power to the state electricity grid. Consequently, the power generation investments would be for the benefit of the company and the people," says Mr. Suri.

## The Jharsuguda hub

The focus of the Vedanta Group's investments in power generation has largely been centred around Jharsuguda in western Odisha, on the State Highway No. 10, 335 km from Bhubaneswar and 310 km from Raipur. Two Vedanta Group companies were selected to be located in this town with a singular objective: generate as much power from the location.

**Result:** Jharsuguda, with 3,615 MW of consolidated capacity, is expected to emerge among India's largest power generating locations.

- The town houses an aluminium smelter (0.5 mn TPA), creating the basis for around ₹3,000-cr investment by the Company in creating a captive power generation facility of 1,200 MW to sustain the Company's expansion to 1.75 mn TPA.

- The town also houses the generation assets of Sterlite Energy. The Vedanta Group is engaged in commissioning 2,400 MW from the location; some 1,200 MW is already commissioned, the remaining is expected to go on stream by September 2011.

## Attractive

The reasons that make Jharsuguda attractive for power generation:

- Huge coal reserves and abundant water; reducing transportation cost
- Well connected with railways and roads; facilitating transportation
- Various medium-large scale aluminium and iron & steel industries in the vicinity further increases power demand
- Cost of capital in the region for establishing a power plant is about ₹34 mn per MW compared with the industry benchmark of ₹45-50 mn per MW, reducing capex

**Environment friendly**

The Vedanta plants invested in cutting-edge technology with negligible emissions. “The Vedanta Group invested no less than ₹500 cr in state-of-the-art, environment-friendly assets and technologies like electrostatic precipitators (hybrid technology of electric field and bag filters) and stacks, maintaining emissions well below the norms specified by the Pollution Control Board. There is a high recycling component within our production cycle as well,” says Mr. Suri. “The superior High Concentration Slurry Disposal (HCSD) system captures the fly ash and converts it into thick slurry before responsible disposal. The water is recirculated into the system, reducing wastage. The slurry comes out as a harmless thick cake which is disposed in ash ponds. So what is good for the company is good for the community. Best of all, we made large investments in procuring the best technology to achieve zero effluent discharge, making our plant compliant with all demanding environmental norms.”

**Sustainable**

The Group’s power plant has experienced management with project track records and mining expertise. Its long-term relationship with coal supplies along with plans to procure owned coal fields would enable steady coal supplies. The plant is strategically located near the coal mines and a water body, reducing power generation cost.

The power plant, being fully automated, improves the operational efficiency and also reduces human intervention and error.

The huge scale of production at a single location, along with easy access to capital, would help the Company gain in terms of economies of scale and uninterrupted supply of funds to maintain constant production throughout the year.

The power generated from the IPP is supplied across India through the Power Grid Corporation of India Ltd (PGCIL) and across Odisha through the Orissa Power Transmission Corporation Ltd (OPTCL) network. The plant also

successfully reduced land usage by 50% against the prevailing MOEF norms of one acre per MW, reducing capex investment per MW.

The power plants partnered with some of the world’s best companies to source products and technology including SEPCO, KEPCO/KPS, Foxboro, Siemens, Evonik, ABB Ltd, L&T and Tata, among others.

Over the foreseeable future, investments by the Vedanta Group in the power sector will be progressively derisked through the following initiatives: by end 2011, all units of Vedanta Aluminium and Sterlite are expected to be fully operational. Even as about 65% of the total coal requirement will be procured from the government through committed agreements, the Group intends to acquire more coal blocks and raise the proportion of captively available resources to reinforce its position among the world’s lowest-cost power producers.

**EMPOWERING ODISHA**

What makes the Vedanta investments compelling is not just that a number of these assets have already been commissioned or are on the verge of being so, but that they were commissioned in tenures shorter than the industry average. “We commissioned two large power plants of a consolidated 3,615 MW in Jharsuguda in a record three years compared with four-five years across the country. “What is compelling is the kind of economic growth this has already achieved for Odisha,” says Mr. Suri. “For instance, the Vedanta Group employed 10,000 people during construction, kickstarting the state’s position as a large employer. Besides, most people who gave their land will be provided employment,



safeguarding their long-term interest. This also triggered huge indirect employment and ancillary industries (coal, transportation, cement and brick making, among others).”

Since some of these capacities have already been commissioned, the benefits have already started to reflect. “Incentivised by the prospect of abundant power, a number of small-

scale industries have been commissioned in and around Jharsuguda in the last couple of years and should accelerate our state’s economy as we go ahead,” says Mr. Suri. “These projects are expected to contribute about ₹500 crore annually to the state’s exchequer through royalties and taxes/levies. Best of all, the Vedanta Group will provide 25% of its generated power to the state at a subsidised rate with the objective of enhancing affordable availability. These initiatives are reflected in local people extending their full support to the project. Consequently, the state’s consumers – industrial and residential – will be among the principal beneficiaries of Vedanta’s power investments in Odisha.”



**‘The next target is to generate power at the lowest cost possible through efficient production processes’**

Interview with Mr. Pramod Suri, (CEO) Aluminium Business Operations

**Q. What are the objectives of the plant?**

**A.** Power is an integral part of overall development of any state. Vedanta is playing a crucial role in making the state power-sufficient. Currently, the primary objective is to run the plant at full capacity. Only one unit is running at full capacity while a second is under trials, and two others are expected to be commissioned in May and September 2011.

The next target is to generate power at the lowest cost possible through efficient production processes using cheap but quality raw material. When the Company acquires completely owned coal blocks, it is expected to emerge among the world’s lowest cost producers.

**Q. Do you think that the company is a pioneer in the fly ash disposal system?**

**A.** Certainly. The international thick slurry disposal system was first used by Vedanta Group company BALCO, for its 540-MW power plant. The system is a necessity for controlling pollution levels by upcoming power plants.

**Q. Discuss some of the major challenges faced by the company since inception.**

**A.** The major challenges for the company include the following:

- land acquisition, clearances and approvals, getting coal linkages and water availability.

Fortunately, the benefits stemming from the project ensured cooperation and support from the government and the locals; these problems were addressed speedily. We cut fair deals with locals from whom we acquired land, offering

them either compensation or jobs. We undertook infrastructural development in the area, unlocking a tremendous growth potential.

We also procured the best technology, ensuring zero effluent discharge and a compliance with all environmental norms.

Vedanta is assured supply of about 65% of its total coal requirement by the government and relies up to 10% on imports. Its owned coal blocks are enough to support the present 1,000 MW capacity. The Company aims to procure its own coal block in 3-4 years, meeting its entire coal requirement captively and in turn, becoming the world’s lowest cost aluminium producer. Water is easily available from the Hirakud Reservoir, 33 km away.

**Q. How has the company helped locals?**

**A.** The company, in line with its defined CSR policy, adopted a number of surrounding villages, focusing on education, infrastructure, employment, healthcare and

sanitation. We associated with various NGOs to ensure effective fund utilisation. Annually, around ₹25-30 crore is invested in various development initiatives of areas in and around the plant.

**HIGHLIGHTS OF THE POWER PLANT**

- 2,400 MW (600 x 4) capacity
- This IPP together with a CPP of 1,215 MW capacity at Jharsuguda will make this plant the single largest power station in India with a total capacity of 3,615 MW.
- Totally computerised with fully automated processes
- State-of-the-art environmental control measures, including electrostatic precipitators (with hybrid technology of electric field and bag filters) and stack, among others
- Hassle-free and environment friendly High Concentration Slurry Disposal (HCSD) system, reducing water wastage and pollution



Mr. Naveen Patnaik, Chief Minister, Odisha, inaugurating the first unit of 4x600 MW Independent Power Plant, Jharsuguda.



# POETRY IN MOTION

Sujata Mohapatra on Guru Kelucharan Mohapatra

Sujata Mohapatra is the disciple and daughter-in-law of Padma Vibhushan Guru Kelucharan Mohapatra, the legendary Odissi exponent.

### On his dedication

*Guruji* would make a mental note of how we should perform and draw his ideas on paper with all details. He would then make this into a poster so that everybody understood his or her role. This helped form a complete picture in everyone's mind. He would leave nothing to chance. His secret of choreography lay in the details.

### On his specialisation

*Guruji's* claim to fame was in the creation of *pallavis* (flowering), the dance sculptures coming to life in various ragas (melodic moods) with intricate rhythmic patterns.

But most memorable and touching were his choreographies in *Abhinayas* or expressional dances which when performed by him would bring tears to the eyes of the onlooker.

He would perform difficult pieces like the *Ahe Neela Saila*, which involved difficult movements throughout without him losing his balance or poise at any point.

### On his biggest contribution

He helped transform Odissi from a position of disrespect to not merely social

acceptance but a deep reverence. It was not easy for him initially. He could have given up but he persisted across the decades.

### On my most moving experience of him

We danced together for the last time at Lucknow when he was 79. On the morning of the performance, it was decided that we (my husband and I) would perform the mangalacharan with him. He was making *paan* for us - his favourite pastime - and began instructing us about our entry. I was told to enter from the right side and my husband from the left. He asked us both to perform the *Ganesha Stotram* and offer the flowers. After the last line of *Ganesha Stotram* we were specifically asked not to look in front, which was unusual. After we finished what we had to on stage, he asked us to turn towards him and he blessed us both - on stage. In a matter of days, he was no more.

### On his versatility

At 79, he could portray a woman's character on stage with greater grace and *lajja* (modesty) than any one of us.

*Guruma* would tell me that when *guruji* had gone to Mumbai to conduct workshops, he would sit on a cemented bench on Marine Drive and observe the gait of Maharashtrian ladies and how the sari would be draped around their back. Sure enough, the next performance would carry a *jhalak* (glimpse) of what he had seen!

### On his strictness as a teacher

*Guruji* could be demanding. I think he was aware that what he taught would be replicated across generations. We just had to get it right. I was one of his favourite students. So he made it even more difficult for me!

### On his commitment

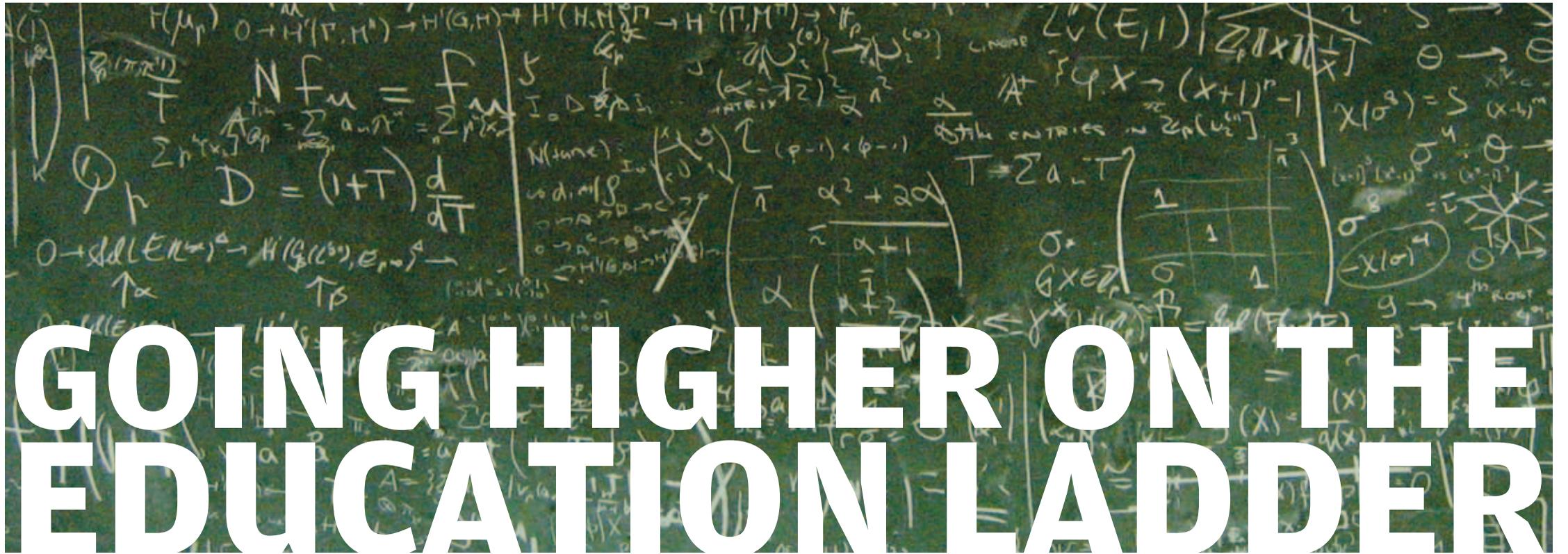
At 79, he was fitter than most a third of his age. Not an extra ounce of fat on his body! When he danced, a sculpture would come to life!

### On his philosophy

*Guruji* would tell us that his dance was the prasad of Lord Jagannath. That was the source of the purity and elegance of his creations as well as his deep devotion and commitment.



**PROFESSOR CHITTA BARAL**  
PROFESSOR, ARIZONA STATE UNIVERSITY



# GOING HIGHER ON THE EDUCATION LADDER

**T**HE HIGHER EDUCATION past of Odisha dates back to the Buddhist Puspagiri University, which is mentioned in the writings of Hiuen Tsang, who visited it in 639 AD. In the modern era, in the nineteenth century, Ravenshaw University in Cuttack was established in 1868, followed by Khallikote College in Berhampur in 1878 and SKCG College in Paralakhemundi in 1896.

Utkal University, established in 1943, is the first modern day university in Odisha, and the 17th university of India. The number of universities in Odisha remained at five until 1999. Since 1999, several new universities were established through the government as well as private initiatives. In the private sector, KIIT and Siksha-o-Anusandhan in Bhubaneswar, both deemed universities, have made significant contributions to the cause of higher education in Odisha.

Odisha has several research institutions, especially in the Bhubaneswar area. Both the Institute of Physics (IOP) and the Institute of Life Sciences (ILS) started as

**In the last seven years, the intelligentsia of the State, especially non-resident Odias, have initiated several campaigns to establish more national institutes, funded by the government, in Odisha.**

state-funded institutes in 1972 and 1989 respectively and were later taken over by the Central Government in 1985 and 2002; IOP is now a DAE funded institute, while ILS is funded by the Department of Biotechnology. The state established an Institute of Mathematics and Applications in 1999 for which Tata Steel built the initial campus. The Regional Research Laboratory (RRL), Bhubaneswar of CSIR was established in 1964 and has now become the Institute of Minerals and Materials Technology (IMMT). The ICAR research establishments in Odisha include the Central Rice Research Institute (CRRI) Cuttack, the Central Institute of Freshwater Aquaculture (CIFA) and a yet to be established centre on foot and

mouth diseases. Bhubaneswar also has a Regional Medical Research Center and nearby Olatpur has a National Institute of Rehabilitation Training and Research (NIRTAR).

Until recently, Odisha did not have any institution fully funded by the central government; there were no central universities, IITs, IIMs, or other MHRD funded higher education institutions. Odisha had its first good-sized institution fully funded by the central government in National Institute of Technology, Rourkela, formerly known as Regional Engineering College. The NIT act in 2007 designated the NITs as Institutions of National Importance.

In the last seven years, the intelligentsia of the state, especially non-resident Oriyas have initiated [1-6] several campaigns to establish more national institutes, funded by GoI, in Odisha. With their grassroots efforts and consistent persuasion, the Central Government was forced to establish institutions like – National Institute of Science Education and Research (funded by DAE), Indian



Ravenshaw University



Utkal University

Institute of Technology and Central University of Odisha. A central university aiming for world-class standard (now referred to as 'University of Innovation') has also been announced for Odisha but is yet to be established. On the other hand, an AIIMS-like institute, whose foundation stone was laid way back in 2003, is expected to start classes in 2012.

These educational institutions corrected the regional imbalance in India to some extent. The Prime Minister of India also conceded this fact and while announcing the establishment of NISER said, "I am also concerned about the regional

imbalance in science teaching and the development of science and technology in India. There was a time when the East was at the forefront. Today the East is lagging behind the South and the West. We need to redress this regional imbalance."

All these centrally funded institutions are at infancy stage. While the central university in Varanasi (BHU) has a faculty of 1,490 (with 1,842 sanctioned positions), the fledgling CUO Koraput only has a faculty of 13. Similarly, IIT Kharagpur has a faculty of 530, while IIT Bhubaneswar has a faculty of 42. While this will change for the better, it will take time.

Although Odisha seems to finally have some good-sized, centrally-funded institutions and universities, the state still lags behind in comparison to other states. This is because Odisha, with little representation in the central ministry, has been losing out on central institutions. For example, although the previous Minister of Commerce had short-listed Bhubaneswar as a location for a new National Institute of Design, it did not

come to fruition. Similarly, while Odisha was the first to propose a tribal university, an idea appreciated by the then HRD minister, it was established in Madhya Pradesh. Similarly, although with a significant coastline and a long maritime history, Odisha is not among the states where one of the campuses of the Maritime University of India are located.

What all this means is that while the higher education scenario in Odisha has improved during the last twelve years, much more needs to be done. For that, the state should improve existing state institutions, spread to other urban clusters and correct regional imbalance inside the state. In particular, general state universities are sorely needed in the Southwest (Bhawanipatna), Central (Angul) and Northwest (Rourkela) regions. It is a pity that the second largest metropolitan area of Odisha, Rourkela, does not have a general university offering programmes in arts, sciences and commerce. The state needs to remain vigilant with respect to central initiatives and push for a campus of the Indian School of Mines in one of its mining hubs, a National Institute of Pharmaceutical Education and Research (NIPER) near its

petrochemical hub in Paradeep, and a National Sports Institute with campuses in Sundergarh and Kendrapada, the hockey and women's football cradles of the country.

Continued effort is required to encourage private institutions and universities. For example, Odisha should take advantage of the interest shown by XIM to become a university and help it become the first Xavier University in India.

The state should take advantage of its mineral resources and have a strategy for converting its mineral resources to human resources. In particular, it must cajole various private and public sector

**A recent silver lining is that finally, a good number of educated people with exposure to international universities have come forward and are trying to spread the message about the importance of Vedanta University to Odisha and India.**

companies that have been using Odisha's mines or are interested in Odisha's mines or both, to make a significant contribution to human resource development in Odisha. In this, MCL and NTPC, have announced medical colleges and should be showcased as models to other companies.

In addition to all of the above, Odisha has a game-changer in the proposed Vedanta University. With a proposed investment of ₹15,000 crores, this proposed university, if established as envisioned, could make Odisha, and especially the Puri-Bhubaneswar area stand out not only in India, but the world. Since its announcement in 2006, some progress has been made on this university, but there have been many hurdles. In terms of progress, a significant amount of the needed land has been bought, designs of the campus and its initial building, including the medical campus have been made, and the Vedanta University bill has been passed in the Odisha Legislative Assembly. The hurdles are mainly due to the fact that the university has proposed parameters that are unprecedented in India: These parameters include ₹15,000 crores of initial budget, of which ₹5,000

crores was pledged by a single individual, over 6,000 acres of land, several townships as part of the university land holdings, 100,000 students and a faculty of 10,000. Such unprecedented parameters have triggered scepticism across all levels. Besides, the Opposition dharma of knee-jerk opposition of government initiatives has significantly delayed the establishment of this university.

A recent silver lining is that finally, a good number of educated people with exposure to international universities have come forward and are trying to spread the message about the importance of Vedanta University to Odisha and India. The Facebook page [7] and account [8] they have created has gathered about 1,500 likes and friends in about six months. Moreover, a group of Odisha origin academicians have formed an Orissa World Class Universities Support Group and prepared a 45-page report [9] explaining the significance and importance of Vedanta University and elaborating on the proposed parameters, especially on the need and importance of the proposed land acreage. The Government of Odisha continues to be fully supportive of this university. We hope that the promoters of this university do not lose heart by the delay and take some proactive steps.

First, they need to look at history and realise that when something unprecedented is attempted, it takes time to get the buy-in and convince sceptics. For example, it took 13 years from 1896, when Jamsetji Tata articulated his vision, till the establishment of the Indian Institute of Science in Bangalore in 1909.

Second, they should seriously consider immediately establishing some small but world-class (in terms of faculty quality) research units in temporary premises and

give the world a glimpse of their vision. This would greatly reduce the scepticism, build much-needed credibility and generate support across Odisha and India. These research units can be folded into Vedanta University when it becomes operational.

In conclusion, Odisha has come a long way in building its knowledge infrastructure in the last 12 years, but has miles to go. But, with a multi-pronged effort involving state, centre, private and PPP modalities, Odisha has the potential of becoming one of the top 'knowledge' states of India, and the Bhubaneswar-Puri area has the potential of becoming the top knowledge center of India.

*This is an edited version of a larger article available at <http://www.orissalinks.com/about-us>.*

## REFERENCES

- [1] <http://www.iiser.blogspot.com>
- [2] <http://www.nis.orissalinks.com>
- [3] <http://pib.nic.in/newsite/erelease.aspx?relid=20345>
- [4] <http://iit.orissalinks.com>
- [5] <http://www.orissalinks.com>
- [6] <http://pib.nic.in/newsite/erelease.aspx?relid=36955>
- [7] <http://www.facebook.com/vedantau>
- [8] <http://www.facebook.com/vedantauniv>
- [9] <http://bit.ly/vu-report>



Institute of Minerals and Materials Technology



Kalinga Institute of Industrial Technology



Vedanta University (proposed)





# DONGRIA KONDHS. A JOURNEY THROUGH TIME



**PROFESSOR A. B. OTA IS A FORMER DIRECTOR, SCHEDULED CASTES AND SCHEDULED TRIBES RESEARCH AND TRAINING INSTITUTE (SCSTRTI), BHUBANESWAR. HE IS AT PRESENT THE DISTRICT COLLECTOR OF BALASORE.**

**I**N THE REMOTE HILLY wilderness of the Eastern Ghats in Southern Odisha reside the Dongria Kondhs, a primitive group of people that have withstood the test of time. Concentrated on the slopes of the Niyamgiri Hills at a height of 1,000-3,000 feet above sea level, they cover parts of Kalyansinghpur and the Bissam-Cuttack and Muniguda blocks of Rayagada district. Settled in little hamlets beside perennial streams (*jharnas*) flowing down the hills, they call themselves 'Jharnia'.

They are one of the two primitive sections of the Kondh tribe of Odisha and are identified by the fashionable exquisite personal adornments they make for themselves and adore. They refer to themselves as Dongran Kuan or Drili Kuan and are considered master horticulturists. The language spoken by Dongria Kondhs is known

as Kuvi – a Dravidian dialect without a formal script. The Dongria Kondhs are found to be by and large illiterate and live in mud houses. Some of them live in houses made of wooden walls (planks) and bamboo splits with a thatching of forest grass and leaves.

They are animists and polytheists, worshipping a large pantheon of supernatural gods and goddesses. All aspects of the Dongria Kondh life – economic, social and political – are centred around their religion. Goddess Mother Earth, called Dharani Penu or Jhankar, is their benevolent Supreme Goddess. In every village street, she sits in a hut called Kuddi, represented by three elevated stones. Niyam Raja Penu, a male deity, is represented by a sword and worshipped during Dasara and Jura Parab and the prevailing belief is that he saves people from unnatural deaths and accidents.

Dongria Kondh villages are located on thickly wooded hill slopes. Habitation sites are chosen based on availability of sufficient land for shifting cultivation and perennial source of water. Viewed from a distance, a Dongria village appears like a cluster of low-thatched houses arranged in two rows, leaving a street in between, surrounded by lush green fields.

Dongria Kondhs are early risers. They wake up at 3-4 am and gather at Kuddi (shrine of village deity) to smoke *pika* and gossip. After an hour, with the cock's crow, they disperse to work on their Dongar lands. They keep themselves busy on their farm lands till afternoon with short breaks for lunch, drinks and rest. The whole family works and eats together on the Dongar land.

Dongria men put on a long and narrow piece of loin cloth in such a way that the two embroidered ends hang in the front and the back. This piece of cloth, 20-28 ft long and 1 ft in width is termed *drili*. Similarly, Dongria women use two pieces of cloth (*kapda-ganda*), each, 3 ft in length and 1.5 ft in width. The first piece is wrapped round the waist with a knot in the front. The second piece covers the upper part of the body like an apron.

They are skilled horticulturists. Taking the maximum advantage of favourable climatic conditions, they cultivate jackfruit, mango, citrus, banana, pineapple and turmeric plantations across vast stretches of land on the hill slopes, right from the bottom of the valley to the hill top. Traditionally, a Dongria has the indisputable right to plant fruit trees anywhere besides his own land and enjoy the fruit of his trees. Dongria Kondhs raise livestock like buffalo (Kodra), cow (Kodi), goat (Adda), sheep (Mendha), pig (Paji), dog (Neudi), fowl (Koyu) and pigeon (Parua) for meeting the demands of prestatation and for their own use during rituals.

The entire tribe is divided into a number of exogamous, non-totemic clans (kuda) and Muthas named Niska, Jakasika, Wadaka, Kadraka, Huiyaka, Sikoka, Bengeska and Praska, among others. Boys

and girls belonging to the same clan are considered as brothers and sisters and hence marriage within the clan is strictly prohibited. Although arranged marriage is the most common form of marriage in Dongria society, other ways of acquiring mates include marriage by capture, marriage by exchange and marriage by service.

Mostly, Dongria family is nuclear, monogamous and patrilineal, constituting the parents and their unmarried children. When a son grows up and gets married, he sets up his own house and lives there with his wife and children.

The major life cycle rituals in a Dongria family include birth, puberty, marriage and death. The birth ritual is followed by the name-giving ceremony known as Mila Daru in which the maternal uncle and grandparents of the newly born child are invited.

As denizens of hills and forests, Dongria Kondh live in harmony with nature. Both the material and non material aspects of their culture are profoundly influenced by nature. This has generated a sense of beauty among them and given birth to a nature artist within each. They are lovers of beauty, reflected in their colourful lifestyle and more conspicuously, in their distinct style of dress and ornaments, dance and music and arts and crafts.

However, the impact of planned change and modernisation is visible in their way of life. Today the Dongria Kondh children regularly attend schools and people are beginning to depend more on modern healthcare facilities. Communication facilities are also being developed in Dongria Kondh villages.

Despite changes, their social structure has retained many basic characteristic features. If the same development momentum is maintained, especially while respecting tradition and culture, Dongria Kondh tribal communities can emerge as one of the world's most advanced primitive tribe group communities.



**JITU JAKASIKA**

*This Dongria youth is pursuing graduate studies in Business Administration at one of the leading management colleges in Bhubaneswar*

**Being one of the few members of the Dongria Kondh community to receive the benefit of education, I understand its importance. Our people have been far removed from mainstream society and thus, modern developments, for centuries. We want our children to grow up and merge with the mainstream. We want industries to flourish, creating employment opportunities, livelihood options and infrastructure.**

**The recent industrialisation of the area introduced us for the first time to development – roads, electricity and safe drinking water. Our women learned to earn a living, our children received nutritious food and proper schooling, and our men were both directly and indirectly employed.**

**Only industrialisation can help us move towards a better lifestyle. The Lanjigarh Project Area Development Foundation (LPADF) by Government of Odisha, Orissa Mining Corporation and Sterlite industries India Limited, in line with the directives of the Supreme Court, contributed towards the development of education, health, drinking water, sanitation and irrigation in the districts of Kalahandi and Rayagada.**

**My dream is to see more young, educated Kondhs who can live a life of dignity without losing our culture.**

Reference: "Dongria Kondha" by A.B. Ota & S.C. Mohanty, published by Scheduled Castes and Scheduled Tribes Research and Training Institute (SCSTRTI), Bhubaneswar, 2008



# NOT JUST ANOTHER VILLAGE

**C**ENTURIES AGO, WHEN DEVOTEES TRAVELLED from far and wide to see the grand deities in Puri's Jagannath Temple, a number of them wanted to carry a piece of the temple back for reverence and nostalgia. And temple authorities needed someone who could paint the eyes and limbs of deities. These simple needs created an entire village of painters of the Hindu pantheon.

The kings who patronised these painters have long since passed into history. Interestingly, even after nearly 750 years, a middle-aged man buys a train ticket to return for good to Raghurajpur while blessing the legacy of his ancestors, a housewife dabs her brush in natural colour and picks up on a tradition that has miraculously survived, a young man revs his bike and is off to market pattachitras for a living and a six year old is initiated into the art so that some day she may sustain her family with the knowledge of the ages.

And this is what makes the story of Raghurajpur worth celebrating. Not just in Odisha, but everywhere. A dying tradition has been given a new lease of life. A losing battle has been won.

So what is the story of Raghurajpur?

In the land of Jagannath, villagers offered the presiding deity services they were best at. Some cooked for the temple devotees. Some stitched. Some interceded with the gods. Some danced. And some painted.

These devotees gradually grew into a community, shaping what is today Raghurajpur. Everybody is an artist in Raghurajpur. The professional. The *paanwalla*. The trader. The housewife. The student. The toddler. The farmer. Generation to generation. Across the centuries, 12 km from Puri.

Raghurajpur has witnessed the births of several different art forms and artists.

The pattachitra, known for its bold lines and brilliant play of colours, is the greatest symbol of Raghurajpur's cultural and aesthetic identity. Tussar painting, another local creation, serves as the inspiration for Sambhalpur silk sarees which have these paintings on them. Apart from pattachitra, there also emerged the Gotipua dance form which was the brainchild of Ray Remananda, the famous Vaishnavite Minister of King Prataprada. Known for its technique, costumes and presentation, this dance form gained popularity in and around the village of Raghurajpur and is credited as the predecessor of the classical dance form of Odissi. The famous Guru Kelucharan Mohapatra also started his initial training from here. Other art forms which deserve special mention include the Chitra pothi (palm leaf inscription). Raghurajpur also specialised in toys made from cow dung, substitutes of wooden and metal toys.

## The magic of pattachitra

Pattachitras depict the Jagannath Temple and its three deities – Jagannath, Balabhadra and Subhadra – and the famous Rath Jatra festival. These paintings are used as substitutes for worship on days when the temple doors are shut for the 'ritual bath' of the deities. They are also used as decorative artefacts to adorn the sanctum sanctorum of temples — as backdrops, seat of the deities and over the curtains and pillars.

Some of the popular themes in pattachitras are completely religious in character: *vesas* (costumes) of Lord Jagannath, Thia Badhia (representation of the Jagannath Temple), Jagannath as Krishna demonstrating his childhood feats, Nabagunjara (figure comprising of nine different creatures), Kandarpa Rath (Krishna on a chariot with colourfully dressed women), war between Rama and Ravana, Radha and Krishna, Panchamukhi Ganesha (five-headed Ganesha), Krishna representing Lord Jagannath, overpowering the serpent

Kaliya in the River Yamuna, Dasavatara (ten incarnations of Lord Vishnu) and Krishnaleela.

Traditionally, the canvas for pattachitras would be prepared by pasting a few layers of cloth, stiffened with tamarind glue followed by a few coats of white chalk paste applied after drying and rubbed with a round coarse stone to get a smooth surface on which the painting would be done. The artists generally used only natural colours derived from conch shells, yellow from orpiment, red from *hingula* and *geru* (crude cinnabar and red ochre stone), black from lamp soot and blue from indigo.

The brushes used for painting would be broad, medium and fine. Hair collected from the ears of calves was used for the broad brush, hair from under the belly of goats for medium brush and hair from the tail of muskrats for fine brush.

The first painting stage was called *pahili ranga bhara*, which involved painting a red background, borders and outlines.

The central solid colours like brick red, yellow, white and lamp black were painted in. The painting would be finished with a coat of lacquer with a soft cloth. After the lacquer had dried, the edges would be clipped to the decorative border.

## Change

Some centuries later, the world changed. Puri was connected by rail. Opportunities widened. Artists migrated. Many switched professions. Art middlemen profiteered. Innovation declined. Centuries-old knowledge was endangered. Raghurajpur artisans lost interest in art forms that had for centuries been their livelihood.

"Raghurajpur went through its most challenging period more than 50 years ago," explains the young Saratchandra Swain. He is a part-time priest and part-time artist. "Raghurajpur struck lucky in a most unusual way. The wife of a British engineer working on the Hirakud Dam was looking for souvenirs to take back to her country. She looked at pen and ink drawings from a couple of villages until

someone mentioned Raghurajpur. When she saw the paintings from our village, she not only bought them immediately and more – she also woke up to an interesting possibility.”

Helena Zealey began to think. If this is how good people in this village painted and if this is how cheap they were selling it for then this was an opportunity because nobody in the outside world had heard of them. Helena did what was instinctive. She bought more paintings to give away. The more the recipients appreciated, the more Helena bought. Which is when she had her next eureka moment. If this is the kind of market that existed for the pattachitra on the outside, then might it not be a worthwhile idea organising the artists, widening the movement and putting more method in the painting or the marketing? There were only 25 artists left in the entire village that was once the capital of art in eastern India.

Which brings us to the inflection point in the recent history of Raghurajpur, where the village graduated from the sporadic generosity of a single individual into a self-directed stream that would one day culminate into a wider river. According to folklore, just before Helena left, she arranged for a competition among the artists of Puri, Dandasahi and

Raghurajpur. Raghurajpur finished third, a grave embarrassment. One Dandasahi artist even wisecracked: ‘If these fellows from Raghurajpur turn into artists, then who will water our trees?’

The vanquished and humiliated took the story back to Jagannath Mahapatra, Padma Shri awardee and the village elder. He embarked on drawing Matsyavataar with such incredible ability that when Helena saw it she was stunned. She decided: all paintings in the future would only be outsourced from Raghurajpur. As soon as Jagannath heard of this, he knew that the turning point had come: from then on, he focused all his energies into training the young and reviving the long-lost tradition of his famed village.

One painting style that Jagannath Mahapatra worked to revive was where all the deities are painted directly – no pencil – using natural colours extracted from the earth. The other was the enduring pattachitra style using a pencil, used largely for the purposes of ornamentation on paper, cloth or palm leaf. The number of artists grew; more buyers trooped in; visibility increased.

The second inflection point was in the late Nineties, when the government of India convinced INTACH to come on board the Raghurajpur turnaround.

“INTACH was at a point where there was a greater respect for intangible heritage and the Raghurajpur transformation fit in neatly with the renewed thinking,” says Anant Mohapatra, State Chapter Advisor, INTACH. “We agreed to collaborate with the government. The timing was right for a number of reasons: the traditional was becoming the novel; there was a greater respect for the ethnic in a world becoming generic. Pattachitras were recognised as affordable, ranging from ₹200 to ₹200,000. And lastly, the government established last mile road connectivity between Puri and Raghurajpur; suddenly, tourists who would have had second thoughts about venturing into a village found that it was just 30 minutes away and no big deal.”

One of the first things that INTACH did was get painters all the way from Ganjam to come and train young Raghurajpur artists in a workshop.

The turnaround accelerated. Raghurajpur was recognised as a National Crafts Village by Odisha. Pattachitras started gaining popularity from village fairs to affluent homes. Even across the world.

### Today

“Today, the pattachitra has not only become a sought after art form but one that generates substantial income for the artists. We sell directly to villages and through organisations like Utkalika and Eastern Zonal Cultural Centre”, says Maguni Mahanty, artist.

Besides, the art form itself has evolved with many using synthetic colour and paint. Its application has extended from leaves to cloth, specifically tassar.

### Future

The need of the hour is to identify the areas of conservation and protection, improve conservation and increase an awareness of ancestral art forms.

## INTACH in Raghurajpur

### Wall paintings revival programme

- Reviving the tradition
- Providing training for artists and masons
- Encouraging artists to re-learn traditional forms of paintings and experiment with creative adaptation
- Preparing a comprehensive documentation of the programme

#### Results

- More employment opportunities
- Better working conditions and increased opportunities
- Year-round commissions provide income even during low tourist traffic months
- Women are equal participants
- Many craftsmen who had stopped practicing their traditional professions have now returned

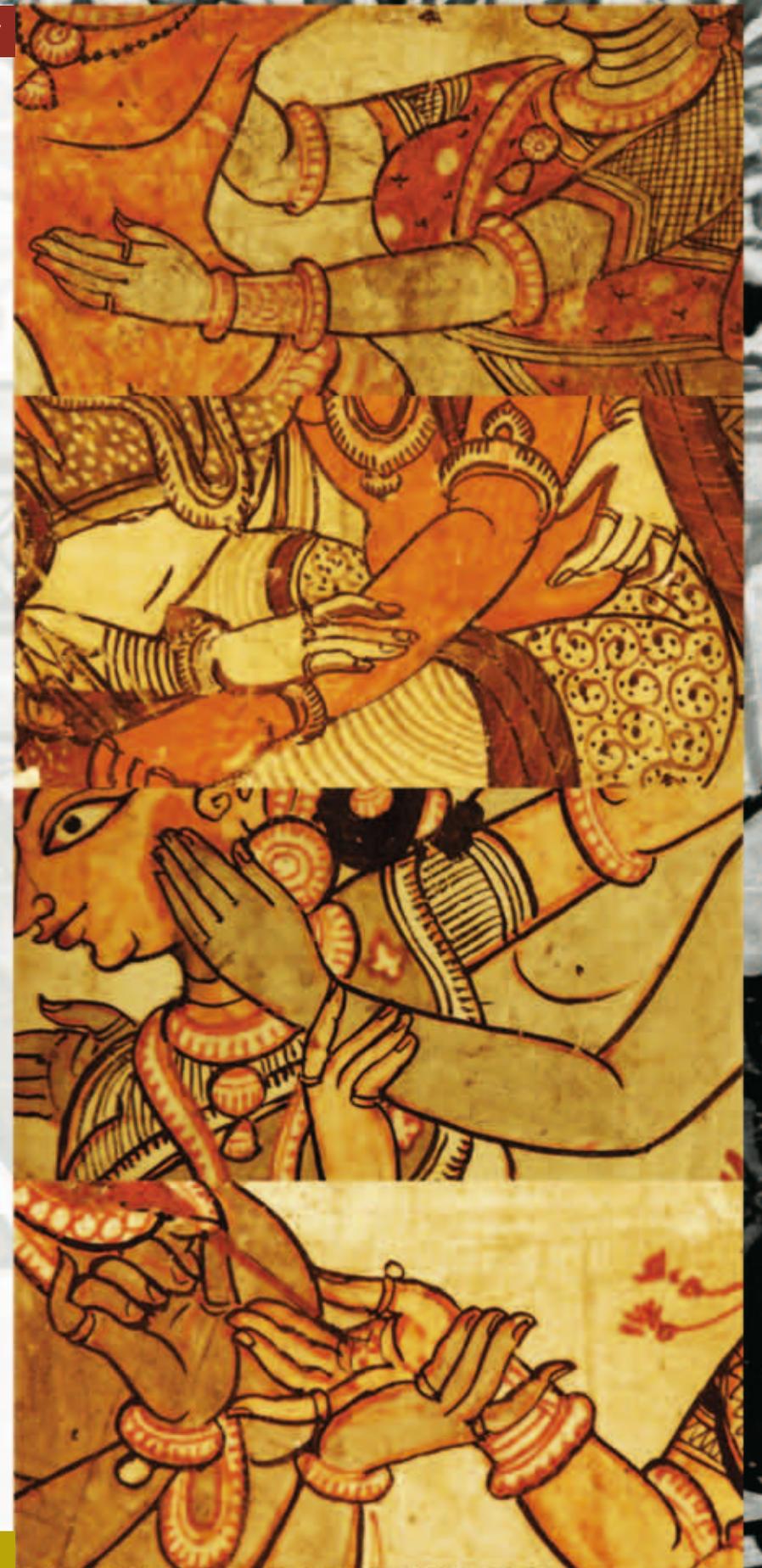
### Integrated development plan

- Sustaining and developing village craft traditions through self-help groups.
- Establishing marketing infrastructure and generating employment opportunities
- Improving infrastructure – widening roads, paving streets, supplying drinking water, providing household toilets (with UNICEF), developing village drainage, encouraging rain water harvesting – in government partnership
- Developing an architectural vocabulary, blending with local environment and traditions around rural imagery
- Ensuring community participation

#### Results

Raghurajpur is in the process of becoming a model for sensitive development of rural and heritage tourism.

Source: UNESCO





# QUEST FOR UNIFICATION

IN CONVERSATION WITH PROFESSOR JOGESH PATI, EMINENT THEORETICAL PHYSICIST, UNIVERSITY OF MARYLAND, USA

*Dr. Jogesh Pati, a native of Odisha, is Emeritus Professor of Physics at the University of Maryland, and, currently, Visiting Research Professor at the SLAC National Accelerator Laboratory, Stanford University. He talks about his pioneering contribution to the idea of unification of fundamental particles and of their forces, for which he received the International Dirac Medal.*

**Q.** What are your earliest memories of Odisha?

**A.** I was born and brought up in Baripada, Odisha. I completed my high school and Intermediate Science degrees in my home town before moving to Ravenshaw College (Cuttack) to complete my B.Sc. (Honours) in physics in 1955. Thereafter, I left Odisha. I have very fond memories of my teachers in high school and college. I cherish my experiences with classmates, which include several overnight fun trips to places like Chandikhole, Chilika, Puri and Konarak. These have left some unforgettable impressions on my mind.

**Q.** How would you describe your career beyond the Ravenshaw years?

**A.** After leaving Ravenshaw, I completed my M. Sc. in physics at Delhi University and doctoral and post-doctoral research in the United States (the former at the University of Maryland, and the latter at the California Institute of Technology and the Institute For Advanced Study, Princeton) in 1963. I have stayed in the US since as a professor of Physics at the University of Maryland for over four decades, and at the SLAC National Accelerator Laboratory, Stanford University, for the last five years. During this period, I have been engaged in

## INSIGHT

research and teaching – two activities I thoroughly enjoy.

**Q.** How have you maintained your connection with Odisha?

**A.** I visit Odisha almost every year from the US. During these visits, I spent time at the Institute of Physics (Bhubaneswar), giving lectures and interacting with its faculty and students. I also gave several popular talks on topics close to my field of research at many institutions including high schools, junior colleges and universities across Bhubaneswar, Cuttack, Puri, Berhampore, Bhadrak and Baripada. It has truly been a joy looking at the curious bright faces of students who would ask a myriad of questions and would not let me leave. These have been some of my most enjoyable experiences in Odisha during my stay abroad.

**Q.** What is your area of research?

**A.** My research lies in the field of elementary particle physics which probes the fundamental building blocks of all matter and simultaneously into the nature of their forces. I will present a brief overview of its current status. Based on intense experimental and theoretical studies for over a century, now we know that all matter is made of atoms (of different kinds), which are made of tiny positively charged nuclei lying at their centres, with negatively charged electrons (denoted by ‘e’) revolving around them. The nuclei are made of protons and neutrons, which in turn are made of two types of still smaller constituents called the up-quark (u) and the down-quark (d). Thus, all matter (a pretty flower, a heap of mud, all of us, and distant stars) are made of just three types of elementary particles: the up and down quarks and the electron (u,d, and e). Interestingly, an intriguing

“ I visit Odisha almost every year from the US. During these visits, I give several popular level talks on topics close to my field of research at many institutions including high schools, junior colleges and universities. It has truly been a joy looking at the curious bright faces of students who would ask a myriad of questions and would not let me leave. These have been some of my most enjoyable experiences in Odisha. ”

fourth elementary particle has been known since the 1930s called the neutrino (nu-e), which is electrically neutral and almost massless. Although not a building block of matter, the neutrino plays an essential role in energy generation in the sun and stars.

I should mention an important feature: following the laws of Quantum Theory, it turns out that each particle must be accompanied by its own antiparticle, having the same mass as the particle but with the signs of all ‘charges’ (not just electric charge) reversed. For example, corresponding to electron, proton, and neutrino, the antiparticles are positron, antiproton, and antineutrino, all of which have been discovered.

The particles mentioned (u, d, e and nu-e) and their antiparticles exhibit four different types of fundamental forces. In order of decreasing strength, they are as follows:

- The primordial strong nuclear force that binds quarks to make neutrons and protons; it also gives rise to the effective nuclear force that binds neutrons and protons to make nuclei. It does not, however, act on electrons and neutrinos.
- The electromagnetic force that acts on all electrically charged particles (like quarks and electrons, though not neutrinos); it is about 100 times weaker than the nuclear force.
- The weak radioactive force, which

converts a neutron into a set of three particles – proton, electron and antineutrino; it is about 1000 times weaker than the electromagnetic force.

- The gravitational force which is far too weak for most elementary particle processes, but it is the only force that controls the celestial motion of stars and planets as well as the evolution of the universe.

We notice that of the four members (u, d, e and nu-e), the quark-like members (u and d) exhibit the strong nuclear force, while the other two (e and nu-e), collectively called ‘leptons’, do not. Thus, in terms of the response to the nuclear force there appears to be a fundamental distinction between quarks and leptons. We will see shortly that this distinction will, however, be interpreted differently within a unified framework.

This is the gist of some of the basic features of the fundamental particles and their forces. An exciting new frontier recently opened with the starting of the Large Hadron Collider (LHC) at the European Laboratory for Nuclear Research (CERN), which smashes protons against protons with unprecedented high energy to probe deeper into the nature of matter. In effect, collisions at such high energies create an environment close to that at the instant of creation of our universe – Big Bang – some 13 billion years ago. Research at the LHC facility

involves a large number of collaborators from different parts of the world including India. The entire community of particle physicists is waiting eagerly to see which fundamental discoveries will be made at the LHC. In this way, the field of particle physics continues to provide an exciting frontier for research.

**Q. What have been your contributions for which you received the prestigious Dirac Medal and other awards?**

**A.** My contributions lie in the area of unified theories. They are guided by the demand of simplicity and beauty in the laws of nature. In their most ambitious form, which has evolved in stages over the last few decades, these theories propose that all basic particles, despite their apparent differences, are aspects of just one form of matter. Likewise, all fundamental forces are aspects of just one kind of force. Interestingly enough, this idea of reduction of ‘many to one’ in physics has its exact parallel in ancient philosophy, in particular the Vedantic, which emphasises unity in diversity. It turns out that the idea of an underlying unity can be cast within a mathematically consistent framework where the observed differences between the particles and those between the forces are attributed to an act of ‘hiding’ by nature. The differences can be overcome and the underlying unity can be perceived by doing experiments at high energies. Sometimes such energies are within our reach, sometimes they are not. Yet, these ideas have made some crucial predictions which have been tested at the available energies and verified to a high degree of accuracy.

Along these lines, a partial unification, linking only the electromagnetic and the weak forces, called ‘electroweak unification’, had been achieved by the works of Sheldon

### How can Odisha excel in science and technology?

- Introducing innovative methods in teaching of science and technology
  - Strengthening existing institutions (Ravenshaw University, Utkal University, Institute of Physics, S.C.B. Medical College and others)
  - Developing new institutions of excellence at par with outstanding institutions like the Indian Institute of Science in Bangalore, The Tata Institute of Fundamental Research in Mumbai, and the top IITs.
- This must result in ample, well paying job-opportunities in the fields of science and technology.

Glashow, Steven Weinberg and the late Abdus Salam in the 1960s. This was an important first step in the path to unification, the predictions of which have been brilliantly confirmed by experiments. The three authors received the Nobel Prize in physics in 1979 for this work.

This brings me to mention my own contribution. It was made largely in collaboration with Abdus Salam. We noticed in 1972 that there are a number of fundamental issues of an aesthetic nature, which remained unanswered within the idea of electroweak unification. These include:

- What is a compelling reason for the co-existence of quarks and leptons?
- Why is the electric charge of the electron exactly equal but opposite to that of the proton?
- What is the origin of the strong force?

To answer these questions, we were led to

propose a novel idea: that one must unify quarks and leptons as members of one ‘family’, and, by utilising the symmetry of this quark-lepton family, one must generate the three basic forces – weak, electromagnetic and strong – as aspects of one force. Such an unconventional unification was met with resistance; however, Salam and I were elated as the quark-lepton symmetry, which we proposed, neatly answered all the three questions listed above, and more. Fortunately, it turned out to have some crucial predictions which have been tested and verified.

Soon after our suggestion, a major pioneering contribution based on the same general idea was made by Howard Georgi and Glashow. It was further strengthened by the work of Georgi, Helen Quinn and Weinberg. The unification idea which thus evolved is now commonly called ‘Grand Unification’.

**Q. What are the experimental tests of your ideas?**

**A.** The grand unification idea has received strong experimental support across several fronts:

- First, the observed ‘quantum numbers’ (set of generalised ‘charges’) of quarks and leptons in a family are found to match precisely those predicted by grand unification.
- Second, precision measurements at the CERN laboratory showed that the strengths of the three forces – weak, electromagnetic, and strong – do indeed become equal, when they are extrapolated in the context of quantum theory to super high energies – prima facie evidence in favour of grand unification.
- Studies at the underground laboratories in Japan and Canada conclusively showed

that neutrinos do, in fact, possess non-zero, though extremely tiny, masses (contrary to common belief). These non-vanishing tiny mass scales go extremely well with Grand Unification, and that too with a symmetry of the type proposed by Salam and me.

While these empirical successes are striking, there is one notable missing piece. By uniting quarks with leptons, grand unification inevitably predicts that the proton, known to be stable so far, must ultimately decay into leptons, albeit with a long lifetime, far exceeding the age of the universe. This too was contrary to common thinking. Following our suggestion, and that of Georgi and Glashow, several experimental groups built underground detectors to search for proton decay. The most sensitive search, at present, is provided by the Super-Kamiokande Laboratory in Japan. So far, there has been no sign of proton decay.

Based on a theoretically predicted range for proton lifetime, one needs to build a large detector, ten times more sensitive than Super-Kamiokande, to discover proton decay. Several physicists in the US, Europe and Japan are keen to build one, which would cost about USD 800 million, but have been prevented by budgetary constraints. Nevertheless, the physics-based need for such a detector is so strong, that sooner or later one will be built. The discovery of proton decay would no doubt constitute a landmark in the history of physics.

So grand unification provided a radically new direction in particle physics, which a large number of physicists still follow, partly because of its aesthetic merits and partly because of its empirical success. It would receive the strongest boost if proton decay is discovered. It is the initiation of

this idea and the observation of some of its crucial predictions that have been among my main contributions to the field.

**Q. What inspired you to enter this field of work?**

**A.** I was keenly interested in physics and mathematics from an early age. Einstein was my biggest source of inspiration. I was fortunate to have a great teacher – the late Professor K. Sree Ramamurthy – at the M.P.C. College at Baripada, who would tell us stories about great physicists and how their ideas grew. Even one inspiring teacher can make all the difference!

**Q. How can Odisha excel in science and technology?**

**A.** We live in the twenty first century, innovation being the name of its game. For Odisha to excel in this environment, we need an all-out effort, together with a genuine change in our perspective of the current importance of these fields. The measures to be taken should include:

- Introducing innovative methods in teaching of science and technology, starting at the elementary and high school levels
  - Strengthening existing institutions (including Ravenshaw University, Utkal University, Institute of Physics, S.C.B. Medical College and others)
  - Developing new institutions of excellence at par with outstanding institutions like the Indian Institute of Science in Bangalore, The Tata Institute of Fundamental Research in Mumbai and the top IITs
  - Creating ample, well-paying jobs in the fields of science and technology, so as to prevent internal brain drain
- It is heartening to see institutions like the NISER, a new IIT and the Vedanta

University (with a strong international component) being built or in active planning. With a hiring of top-rank faculty (the key to success), these institutions, and more to come, can dramatically brighten Odisha’s horizon in the fields of science and technology over the next two decades.

Let me come back to my interactions with students in Odisha. From these I learnt beyond doubt that Odisha does not lack talent at the high school level and beyond. At the same time, when I look at Odisha’s progress in the past six decades, I cannot help feeling that its talents remain grossly underutilised. Nurturing the talents of young minds from an early stage, so as to encourage creativity, and ensuring that a good fraction of them pursue their careers in science and technology would do wonders for the state.

### Message to Odishan young aspirants

If I were a student, I would like to be told the following by my teachers and parents:

- Preserve your sense of curiosity about things you see in nature and learn.
- Preserve your two inner talents: creativity and the power to imagine.
- Be self-reliant; learn materials beyond your course work by reading on your own.
- Keep your goals and ambitions high and strive to attain them.



“Focus on the journey, not the destination. Joy is found not in finishing an activity but in doing it.” – Greg Anderson

Nothing could be truer for the many spiritual jatras (journeys) that adorn the religio-cultural calendar of Odisha – legendary journeys with their own inspiring history and utility in the social fabric. The common underlying philosophy that runs through these historical journeys, particularly in Odisha, is that of uniting, enriching and cleansing. If only life – this enormous journey – were a replica of these grand journeys of fun, frolic, faith, sights, sounds, tastes and aromas!



### Rath Jatra

THE JOURNEY CELEBRATED with thousands of small and big versions across the world is the Rath Jatra or chariot festival. Synonymous with Odisha, this journey of the divine siblings – Lord Jagannath, Balabhadra and Subhadra – has no parallel for frenzy and opulence.

As the deity troika commence their annual eight-day holiday from the Puri Jagannath Temple to their aunt Gundicha’s Temple on the second day of the lunar month (*Asadha* – June/July), emotions abound on the streets of Puri. The Lords ride mammoth wooden chariots pulled by thousands of devotees. The Lords come out to meet one and all, making the festival a great leveller, and bringing alive the legend of Bhakta Salabeg, perhaps the most celebrated devotee of Lord Jagannath. Salabeg, born to a Muslim father, was shooed from the gates of the Puri temple for not being a

Hindu. But bowing to his unwavering devotion, the Lord stopped in his tracks during one such rath jatra to fulfil Salabeg’s ultimate wish – a glimpse of the Almighty himself. Salabeg’s bhajans ‘Ahe Nila Saila’ and ‘Patita Pabana Bana’ remain household expressions of devotion in Odisha forever.

Rath Jatra is all of two kilometres but the run up to it takes months. It is marked by the deities taking a dip in fragrant sandal wood water, bathing in 108 pitchers of

water, recuperating in the sanctum sanctorum from the fever that the water overdose leaves them with and then getting treated with special ayurvedic medicines!

The jatra enthralled lakhs of devotees every year. Its high point comes when the Raja of Puri sweeps Lord Jagannath’s chariot with a golden broom symbolising humility and caste equality. The festivities last nine days – its after effects lasts a lifetime!



SUBHRA PRIYADARSHINI  
EDITOR, NATURE INDIA, NATURE PUBLISHING GROUP

# JOURNEYS THAT CLEANSE AND UNITE



## Dhanu Jatra

**T**HIS ONE BEATS EVERY TIME machine story you have ever heard.

What happens when two modern towns – people and all – travel back into mythological times and transform themselves into Gods, demons and village folk for 11 days? They become part of the world’s largest open air theatre!

Dhanu Jatra celebrates the story of Lord Krishna’s victory over his evil uncle Kansa. Enacted by town folks on the banks of River Jeera in Bargarh, the drama unfolds over 11 days and culminates in the big fest when Lord Krishna kills Kansa in the victory of good over evil. To the

amusement of millions of tourists, the towns deck up as Mathura and Gopapura and the river is imagined to be Yamuna. Gopis ferry milk and dairy products across the river. Kansa, chosen from among many worthy contenders, rules over Mathura (Bargarh) going around on an ornately decorated elephant and giving out administrative orders. Each day is marked by a grand evening celebration at the open air court of the king in the middle of Bargarh. The young Krishna and his brother Balram, invited to Mathura by the scheming Kansa on the pretext of witnessing a yajna, end the tyranny of the demon king on the final day of festivities.

The music and dance extravaganza, traditional fairs and the sheer magnitude of the stage that the drama is enacted on make it a festival worth coming back to year after year.

Historians are divided on the origin of the festival but the first lavish Dhanu Jatra is recorded to have been celebrated in 1948 with a dual purpose – to celebrate the Independence as a victory of good over evil.



**DHANU JATRA CELEBRATES THE STORY OF LORD KRISHNA’S VICTORY OVER HIS EVIL UNCLE KANSA.**



## Bali Jatra

**W**AY BACK IN THE LATER PART of the 1800s, British officer Mackdanet Saheb inaugurated the two ports of Dhamar and Chandabali on the River Mahanadi. The maritime traders of Kalinga (present-day Odisha) embarked on their voyages from the mouth of the Mahanadi to the Indonesian cities of Bali, Java, Sumatra and Borneo on large vessels or *boitas*. The day of Kartik Purnima in October/November was chosen to begin the journey for its favourable winds that pushed the sails into riding the waves faster.

Bali Jatra or the ‘Journey to Bali’ is held in the historic city of Cuttack on this very day ever since. The Gadagadia ghat of River Mahanadi comes alive for a week from the auspicious day of the full moon. The most spectacular sight of Bali Jatra is

the *boita bandana* ritual or boat worship. Thousands of boats made out of dried banana tree barks and decorated with small oil lamps are set sail in the river after sundown. In ponds and water tanks across the state, children make their miniature *boitas* to commemorate Odisha’s glorious legacy of maritime trade.

The folklore of Tapoi, the miserable sister of seven sailor brothers, is inherently woven with Bali Jatra. It is the heart-rending tale of Tapoi, ill-treated by all her sisters-in-law except the youngest, while her brothers are away on the voyage to Bali. Unable to bear the torture, Tapoi hides in the forests and prays for the safe return of her brothers. Goodness is redeemed in the end when the brothers return and mete out punishments to their erring wives.

Bali Jatra is marked by a colourful fair near the Barabati Fort witnesses millions



of footfalls from across the world. The fair, arguably the biggest in the state, lures people with its colourful stalls, especially the ones selling Odia delicacies such as the celebrated *Dahibara Aloodum*.

The popularity of these jatras has only increased over the years, going by the crowds that they attract. They are undoubtedly the high point in Odisha’s cultural calendar.

THE IMFA STORY

# ROOTS IN ODISHA. KNOWN TO THE WORLD



**“WE HAVE GROWN IMFA INTO ONE OF THE MOST COMPETITIVE FERRO CHROME COMPANIES IN THE WORLD”**

Says Subhrakant Panda, Managing Director, IMFA

**T**HE PROMOTER WHO established Indian Metals & Ferro Alloys in the late Sixties did so with a distinctive vision: providing a foundation that would transform Odisha into one of the most dynamic states in India.

Just when IMFA (through its Group company Indian Charge Chrome) appeared on the cusp of a take-off, technical problems in its power plant hobbled the Group company and pulled it into extended litigation and lost opportunity; just when it appeared that Odisha would take off, competing states took away its minerals for onward labour-intensive conversion in their own states, following which Odisha was overlooked in the national development race for decades.

The result is that Indian Charge Chrome nursed large accumulated losses of ₹1,803.78 cr as on 31st March 2001; Odisha too reported unimpressive GDP growth rates as investment stayed away and intellectual capital migrated.

### Transformation

Then things transformed. Indian Charge Chrome was merged into parent IMFA,

the latter leveraged decades of quietly consolidated competencies and emerged among the most valuable standalone ferro alloys companies on the Indian bourses at ₹1,945.66 cr (as on 31st March 2010). Odisha too reported GDP growth of 9.7% in 2009-10, 170 bps higher than the national average.

### Not just another success story

The relevant point is that IMFA is not just another national success story. It is a global success story. “In terms of global ferro chrome production capacities, we are among the top ten in the world,” says Subhrakant Panda, Managing Director, IMFA. “In terms of peripheral technologies, we are among the most efficient, leading to one of the most competitive cost structures in the world. In terms of quality, our silicon product has been appraised as one of the best in the world by an independent appraisal agency. In terms of business mix (captive and commercial implications), we are among the most extensively integrated in the world with around 52% of our input cost being derived from resources within the company. This critical number is

higher than most peer companies the world over.”

### Competition-proof

IMFA’s counter-cyclicality – critical in a business that has over the years acquired a reputation for sharp profit swings – was demonstrated during the ‘yo-yo’ days of 2008-09.

Despite the sharpest swing in ferro alloys realisations in the briefest of tenures, IMFA was able to report a positive bottomline for 2008-09. Despite a major decline in raw material costs, the quantum of inventory loss, as a proportion of the total loss in the third quarter, was lower than most peer companies. When most peer ferro alloy companies were adding to their debt to invest in end product capacities, IMFA preferred to repay ₹9.31 cr and invest in enhancing raw material resource availability.

### Swimming upstream

IMFA’s consistent gain has been resisting a temporary trend for a long-term business advantage. Odisha accounts for 98% of India’s chrome ore. “It would have been easy for us to mine and market

## THE IMFA STORY

chrome ore as a convenient business when we went into production in the late Sixties,” says Subhrakant Panda. “However, one of the things that our Founder-Chairman Dr. Bansidhar Panda – a metallurgist who worked as a research scientist in the US – was insistent about was that every tonne of ore mined out of the ground in Odisha would have to be converted into a downstream product within the state before being marketed to customers. In doing so, he laid the foundation of IMFA’s extensive value-chain, which has extended from ore to ferro chrome today with spinoff value-addition being derived from power generation (captive and proposed extension into commercial) and coal mining (proposed).

A number of things happened as a result:

- Every single tonne of ore (₹2,200 per tonne) that IMFA mines in Odisha is enhanced in value (₹42,000 per tonne) within the state.
  - IMFA provides employment directly (recruited and contract) to 4,000 and indirectly to another 4,000, making it one of the largest industrial employers in Odisha today.
  - IMFA pays ₹80 cr in salaries across eight locations, which has a multiplier effect in catalysing local economies.
  - IMFA is among the few mining companies with their headquarters in Odisha, contributing significantly to the local exchequer.
- “And all this has been achieved through the simple understanding that we must not ‘gift’ mineral resources to other companies, states and countries but achieve the highest value-addition for the benefit of the state and its citizens,” says Panda.

EVERY SINGLE TONNE OF ORE (₹2,200 PER TONNE) THAT IMFA MINES IN ODISHA IS ENHANCED IN VALUE (₹42,000 PER TONNE) WITHIN THE STATE.



### Optimistic future

So where is the opportunity for IMFA today?

**One**, at a time when ferro chrome producers worldwide are facing cost pressures and, in some cases, even possible production disruptions due to electricity shortages, IMFA expects to leverage its backward integration into power generation and coal mining to strengthen competitiveness as well as leverage this rich experience for onward revenue generation.

**Two**, IMFA may appear to be a single product company but actually is three standalone businesses – mining (chrome ore and coal), power generation and ferro alloys – integrated at the apex level for enhanced competitiveness and value addition.

**Three**, IMFA recognises that Odisha is emerging as India’s steel manufacturing hub and with demand for stainless steel – which is where its product is used directly – expected to grow significantly, it stands to benefit.

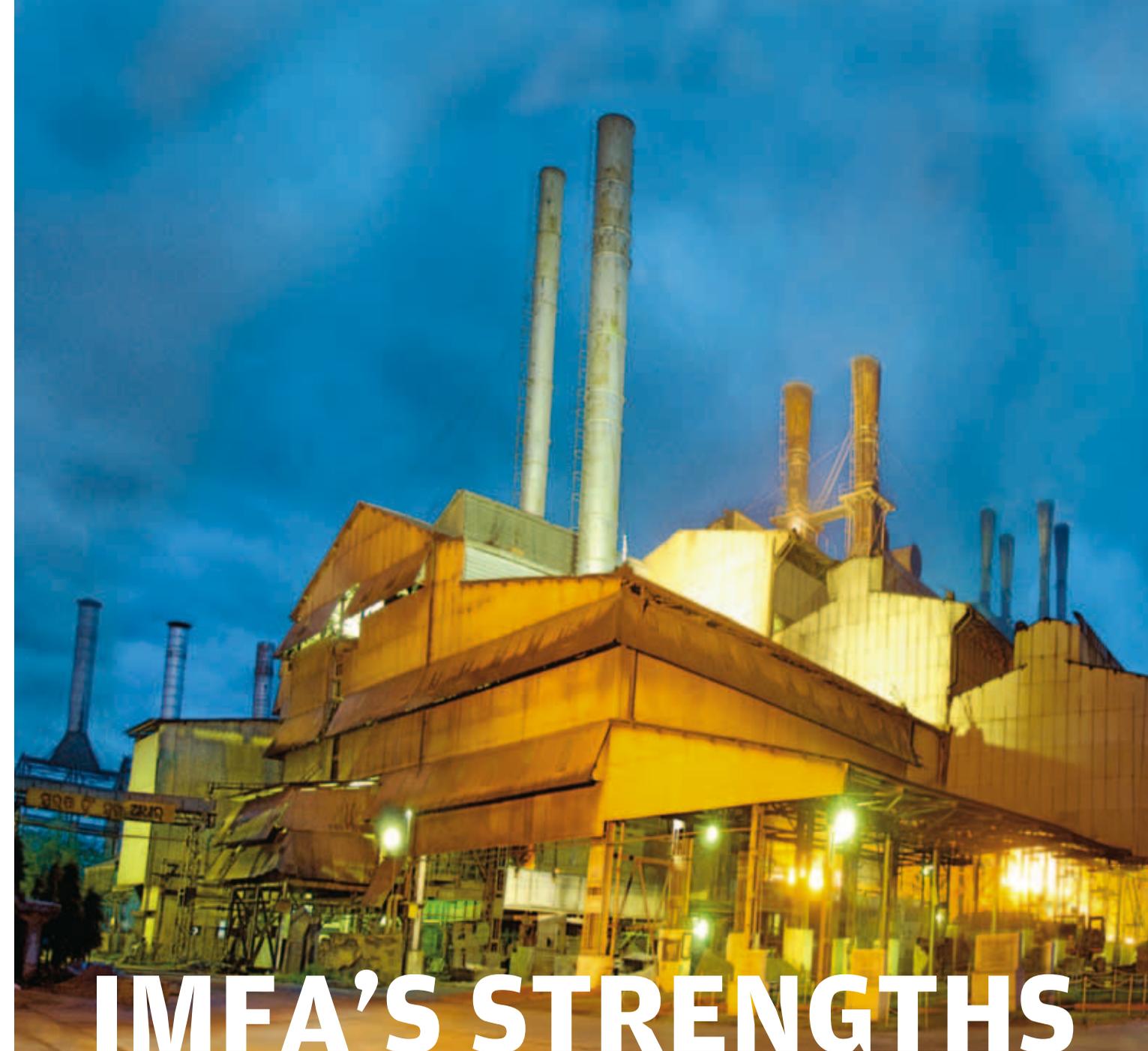
**Four**, it sees a lot of opportunity right where it is and will not look to venture into other geographies just as a fad.

“We are attractively placed,” says Panda. “The company possesses six furnaces totalling 187 MVA which translates into nearly 275,000 TPA of ferro chrome. We have 108 MW of power generation capacity, which will increase by 30 MW shortly and another 120 MW by the fourth quarter of FY12. We expect to commission coal mining by the end of 2011. The result is that we expect to reduce our costs even further and strengthen our viability over the foreseeable future.”

### Resurgent Odisha

One must come back to Odisha and IMFA’s place in it. If Odisha grows, more stainless steel will be consumed. If more stainless steel is consumed, more ferro chrome will be used. If more ferro chrome is used, IMFA would be a direct beneficiary.

So what is Panda’s take on Odisha? “The speed of growth indicates that the state is indeed making up for lost time,” he says. “By insisting that companies extracting ore out of Odisha commission downstream manufacturing plants within the state, there appears to be a definite interest in putting down large investments in Odisha. This has had two interesting manifestations: in a state conventionally starved of industries, one is finally seeing the incidence of industrial zones. Besides, there is a lot more workforce diversity today, indicating that a number of migrants are coming into the state today for better career prospects. The brain drain is reversing!”



# IMFA’S STRENGTHS

**Integrated:** IMFA is India’s largest, integrated ferro alloys manufacturer supported by captive mine ownership (chrome ore and quartz), captive power plant and the ownership of a coal block (to be commercialised).

**Ground resources:** IMFA’s estimated chrome reserves of 21 million tonnes are expected to last another 25 years at existing consumption appetite; its Utkal C block of coal in Talcher comprises extensive surface deposits, facilitating early commercialisation

**Global:** IMFA enjoys a strong global presence in China, Japan, Korea, Taiwan and other countries.

**Scale:** IMFA’s 187-MVA furnace capacity is the highest in India’s ferrochrome industry; its 108-MW power plant is the largest captive unit with any ferro chrome manufacturer in the country

**Location:** IMFA enjoys a locational edge — a mere 100 km from the Paradip port, 100 km from the Jajpur and Keonjhar mines and 80 km from Mahanadi Coalfields Ltd (possibly Asia’s largest coal mines).

**Financials:** IMFA’s robust net worth (₹606.63 cr) complemented its modest gearing (0.7) as on 31st March 2010.

**E**CONOMIC PROSPERITY WILL BECOME AN INEVITABLE REALITY WHEN LINKED WITH HEALTH, NUTRITION AND EDUCATION. IN A NATION WHERE EVERY THIRD CHILD IS MALNOURISHED, IT IS CHALLENGING TO PROVIDE EDUCATION FOR ALL.

# PROVIDING OPPORTUNITIES TRANSFORMING DESTINIES

VEDANTA FOUNDATION INITIATED VEDANTA BAL CHETNA ANGANWADI (VBCA) PROJECT IN KALAHANDI AND Rayagada districts of Odisha, plagued by malnutrition and poverty. The Foundation provides additional nutrition, healthcare and education to 76,000 children between 0-6 yrs in 1,492 Anganwadi Centres in 12 blocks and one municipal area in Kalahandi and Rayagada district.

The Foundation has tied up with government-run Anganwadi Centres under Integrated Child Development Services (ICDS) program, to provide proper pre-school education to children along with nutritional supplements to government supplied food. The project focuses on the overall development of children covering cognitive, sensory, language, physical and social developments with emphasis on education, nutrition and healthcare. "Less privileged children love to come to the Anganwadi Centres as they get quality education through fun and games, along with nutritious food," says Ms. S. Chaamundi, National Project Head, VBCA Project of Vedanta Foundation. The Early Childhood Care and Education Programme is given due weightage by Vedanta Foundation because of its significance in providing the child with a sound foundation for integrated development.



Former President of India, Dr. APJ Abdul Kalam at Lanjigarh



Children learning at the Anganwadi Centre



Children playing at the Vedanta Day-Care Centre



Mrs. Kiran Agarwal (centre), Executive Trustee, Vedanta Children Programme at the Children's Day celebration at Lanjigarh



Students benefiting from the computer literacy programme at Vedanta Foundation

The initiative has significantly impacted the development of children in the area. "It is heartening to see tribal children singing English rhymes in one of the remotest corners of the state," remarked Dr. Mona Sharma, Former Principal Secretary, Ministry of Women & Child Development, Government of Odisha, during her surprise visit to a few of the centres in Kalahandi. The daily attendance of children has shot up to 98% in most of the centres. Trained Anganwadi workers keep the interest of the children alive through playful teaching methods. Puspa Majhi of Balabhadrapur says, "My son is happy to attend the Anganwadi Centre. Teachers there teach through playful methods which hold the attention of the kids."

People are happy that their children are nurtured properly, through proper education and healthcare. "My grandson's health has improved noticeably," says Saraswath Majhi during administration of the chocolate-flavoured deworming tablets to children in Anganwadi Centres. This deworming program is undertaken every six months by Vedanta Foundation. In line with the Vedanta Group Chairman Mr. Anil Agarwal's vision of a malnutrition free India, about 17,500 Anganwadi children in Odisha, aged between 7 months and 3 years, are administered multi-vitamin syrup every month.

To make the program more participatory, Vedanta Foundation has promoted Village Empowerment Committees – comprising members from self-help groups, mothers' committees and opinion makers of the village – to monitor and advise the Anganwadi Centres. These Village Empowerment Committees will progressively assume the ownership of the Anganwadi Centres in due course as per the directives of the Supreme Court.

The Vedanta Foundation aims to reach the largest number of children in the shortest time. The Foundation has adopted 1,200 centres – 600 in Odisha and 600 in Rajasthan – in 2009 in Phase II, enhancing the total number to 2,000, benefiting over 85,000 children living in deep rural areas. The Vedanta Group intends to reach out to minimum 10,000 Anganwadi Centres to

benefit about 6,00,000 underprivileged malnourished children in about three years. To address malnutrition in children below six years of age, the Vedanta Group is working with state governments and the Department of Women and Child Development towards holistic and integrated development of children through Vedanta Foundation.

### Day-care centres for pre-school children

Vedanta Foundation's first child care centre opened at Niyamgiri Vedanta Nagar in 2004 in Lanjigarh block of Kalahandi, which helped create a conducive environment for rural child (pre-school) development. Around 44 Day Care Centres are run in Lanjigarh in buildings given either by the district government or the local community. These centres, operated by Vedanta Foundation, function in the kindergarten model following Montessori methods of teaching. Value-based learning for good habits, hygiene and sanitation, cognitive skills, sensory capabilities, language competencies, social graces and good pre-school learning for strong schooling, coupled with nutritious food three times a day and healthcare service at the centre contributes to the holistic and integrated development of each child in a significant manner.

### Vedanta Orissa Literacy Programmes

Vedanta Foundation established 14 computer training centres covering 32 villages; the four main centres being R.R Colony, Niyamgiri Vedanta Nagar, Bissam Cuttack and Munikhol, benefiting 1,657 people. Students are trained to become internet-friendly with the objective to enhance their career prospects. Personality development classes help students groom their communication skills and confidence.

### Vedanta Village Tailoring Centre

Vedanta Foundation and Bissam Cuttack Gram Panchayat have collaborated to introduce tailoring courses for rural women.

### Vedanta Umeed

The Foundation aims to rehabilitate prisoners in Berhmapur Jail (district Ganjam), Choudwar Jail (district Cuttack), Sambalpur Jail (district Sambalpur), Bhubaneswar Jail (district Khurda), Bhawani Patna Jail (district Kalahandi) and Baripada Jail (district Mayurbhanj), following the completion of their terms. Under the Vedanta Umeed programme, inmates are trained in computer literacy to enhance their employability. Till date, 193 inmates have benefited.

### Vedanta Prison Tailoring Centres

Vedanta Foundation and Orissa Prisons Authority have collaborated to assist female inmates pursue tailoring careers following the completion of their jail terms. The Foundation commenced tailoring units at Berhampur Jail and Sambalpur Nari Bandi Niketan. There have been proposals for the construction of three more centres at Baripada, Koraput and Bhawani Patna.

### Vedanta Rojgar Avsar

The Vedanta Rojgar Avsar programme at Rourkela supports and assists underprivileged, unemployed youth through relevant employment opportunities. The project makes it possible for employers and job-seekers to interact through 'job fairs'. More than 400 youths attended the fair, 100 were selected and 50 were offered jobs.

### INTERVIEW



**The Vedanta Anganwadi Project aims to contribute towards the holistic and integrated development of children in tribal and remote areas of Odisha. It focuses on the alleviation of malnutrition and encourages education among children**

An interview with Ms. S. Chaamundi, National Head, Child Welfare Projects, Vedanta Foundation

**Q.** What is the objective of Vedanta Anganwadi Project in Odisha?

**A.** The project aims to contribute towards the holistic and integrated development of children in tribal and remote areas of Odisha. It focuses on alleviation of malnutrition and encourages education among children as they are the wealth and future of India. Good food, good health and proper education will ensure not only a brighter future but also general wellbeing and happiness.

**Q.** How many villages and children have been covered ?

**A.** Vedanta Bal Chetna Anganwadi Project has 1,492 Anganwadi Centres across 12 blocks and one municipal area, covering 76,000 children. Vedanta's intervention has reflected in a considerable increase in attendance in the centres and has resulted in a significant, all-

round development of the children.

**Q.** What is your long-term plan for Odisha?

**A.** The Vedanta Group intends to reach out to a minimum of 10,000 Anganwadi Centres to benefit about 6,00,000 underprivileged, malnourished children in three years, of which a significant percentage will go to Odisha.

**Q.** What kind of change have you noticed following the Vedanta's child care services in Odisha?

**A.** Now most parents are assured that their children are being taken care of in terms of pre-school education and health. Daily wage earners are relieved from the additional burden of childcare. There has been an attitudinal change towards education in the community.

### AREAS OF OPERATION

- Vocational training, employment
- Child care
- Women empowerment
- Tribal welfare
- Education campus

### BLUE PRINT FOR THE FUTURE

- Offer value education through industry partnership
- Offer employment-assured training programmes

# BATTLING SICKLE CELL ANAEMIA

A profile of the doctor leading the fightback - Dr. Dipika Mohanty



## Sickle cell anaemia is one of the deadliest afflictions known to man. But in Odisha dawns new hope.

Sickle cell anaemia (sickle cell disease) is a disorder of the blood caused by inherited abnormal haemoglobin resulting in a distortion (sickled) of red blood cells. The sickling is caused by conditions associated with low oxygen levels. The sickled red blood cells are taken up by spleen. When the number of red blood cells declines due to destruction, the result is anaemia and the condition is referred to as sickle cell anaemia.

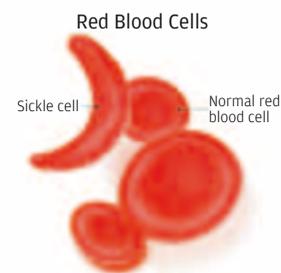
“We have been working to fight this disease for decades,” says Dr. Dipika Mohanty, perhaps Odisha’s biggest expert on the subject. “This disease is dangerous because the irregular sickled cells can block small blood vessels causing damage (tissue and organ) and pain. Each person has two copies of the gene that determine whether that person has sickle cell disease. If both copies are ‘normal’ alleles, then only normal hemoglobin (hemoglobin A) is produced. If one of the two alleles is ‘defective’ (hemoglobin S), then that person has a mixture of normal and sickle hemoglobin, a condition known as ‘sickle cell trait.’ If both copies are ‘defective’ alleles, inherited from parents, only sickle hemoglobin is made along with some foetal hemoglobin and the person suffers from sickle cell anaemia. We say he is homozygous for HbS.”

## The incidence of sickle cell disease has been high – around 18% – in western Odisha, especially in Kalahandi, Sambalpur, Bolangir and Sundargarh.

This indicates that more than 20 per thousand newborns are vulnerable to sickle cell disease. This is higher than the national average. Consider: the Infant Mortality Rate (IMR) of rural Odisha is 78 compared to the national rural average of 64; the IMR of urban Odisha is 55 compared to the urban national average of 40.

No hope? Not really. “A lot of people may infer that the situation is hopeless but there is indeed light at the end of this tunnel. For instance, we believe that infant mortality rate in our most affected district can be brought down through simple intervention programmes – as we have already begun to demonstrate,” says Dr. Mohanty.

But first, another insight into the disease. Generally, sickle cell disease is the result of a genetic disorder that cannot be cured. The only cure available



now is bone marrow transplantation, which is not possible in all cases as one needs matching tissues from compatible donors. This mode of therapy is expensive especially in the event of no compatible donors.

Indians are luckier. The morbidity (suffering) in Indian sickle cell cases is less than in African sickle cell patients. As a result, their life quality can be easily improved with simple intervention measures. “We believe that the life quality of those suffering from sickle cell anaemia can easily improve through intervention measures like early detection in infants followed by vaccination, preventive infections and plugging nutritional deficiencies,” says Dr. Mohanty.

**The big step will be improved technology to address the disease.** “We believe that neonatal screening will be a big step towards reducing the infant mortality rate in western Odisha,” says Dr. Mohanty. “We are now screening the urban and rural areas of Kalahandi district. These children will not just be checked initially; we will follow this with a periodic three-month check to record their ongoing development followed by subsequent annual interventions.”

**Dr. Mohanty is optimistic of Odisha’s response to this health problem.** “Once adequate infrastructure is created (underway), a number of medical professionals will be motivated to return. There is also a fair

responsibility on our shoulders; if professionals like us can inspire the younger generation to return and contribute, it can do wonders for medical service in Odisha,” she adds.

Dr. Dipika Mohanty was instrumental in establishing world-class departments of haematology in India and abroad. The Institute of Immunohaematology (IIH) at Mumbai, which she helped establish, was recognised by World Federation of Haemophilia and International Society of Thrombosis and Homeostasis as well as World Health Organisation (WHO) as the premier training centre for South-East Asia. She has contributed more than 400 scientific papers to national and international journals of repute apart from contributing several chapters to various textbooks of medicine, monographs in haematology, haemophilia and transfusion medicine. She has received more than a dozen international and national awards and honours. She is passionate about setting up an Institute of Haematology in Odisha.

## Dr. Mohanty speaks from first-hand experience. She was born in Odisha, educated abroad but returned for research.

“I always wanted to be a doctor,” she says. “I was inspired by my father, who was an internationally recognised pharmacologist and research worker. I am also indebted to Professor K.C. Das, another internationally renowned haematologist. I did my undergraduate study in medicine at S.C.B. Medical College (Cuttack) and left to pursue hematology in PGI, Chandigarh. I trained at the Royal Postgraduate Medical

**IF I HAD STAYED ABROAD, I WOULD HAVE MADE AN INCREMENTAL DIFFERENCE IN AN ENVIRONMENT WHERE MOST OF THE PROCESS IMPROVEMENTS HAVE ALREADY TRANSPIRED. ONE RETURNED PRECISELY BECAUSE THERE WAS SCOPE OF SIGNIFICANT IMPROVEMENT IN THIS STATE AND COUNTRY.”**

School and Hammersmith Hospital (London) and at Oxford’s haemophilia centre. After years of working at such amazing places, one wonders ‘Why can’t we have similar facilities in India?’ So I answered the calling by returning to set up centres of excellence to conduct research in sickle cell and thalassemic diseases at P.G.I, Chandigarh, and Institute of Immunohaematology (ICMR), Mumbai.”

## For an expert of her standing and achievements, why did she choose to stay back in Odisha?

She admits, “Yes, there were a

number of offers from outside Odisha over the years. I was offered the post of Director of the Stem Cell Research Center in Hyderabad by The Apollo Group with attractive remuneration. There comes a time in one’s life when one wants to contribute, when one wants to leave footprints in the sand. I turned the offer down because I belong to Odisha and wanted to contribute to the state. I also wanted to be part of a revolution in the field of research in Odisha.”

When Dr. Mohanty embarked on this daring decision, the cynics crept out of the woodwork. Wrong decision, some pronounced. A little premature, said others who were more charitable. “However, at the end of the day, the question is how much one can alter the status quo where one decides to work,” says Dr. Mohanty. “For instance, if I had stayed abroad, I would have made an incremental difference in an environment where most of the process improvements have already transpired. One returned precisely because there was scope of making a significant improvement in this state and country.”

For someone accustomed to the systematic infrastructure-rich environment of the developed west, Odisha was not easy. “The challenges were significant due to a lack of infrastructure, attitude and work culture. Two of the things that I noticed some years ago: general complacency and hesitation in shouldering any responsibility in most spheres of Odisha’s life. One also noticed a need for genuine collaborative teamwork,” says Dr. Mohanty.

## The future is optimistic.

“I see a huge scope for improvement in Bhubaneswar, which has reasonable infrastructure that can be built upon. Realisation of this reality can combat this disease in its entirety,” says Dr. Mohanty.

# MINING.

## DESPITE POSSESSING ABUNDANT MINERAL RESOURCES, ODISHA IS STILL REGARDED AS POOR AND BACKWARD...



**NILMADHAB MOHANTY,**  
FORMER UNION INDUSTRY SECRETARY  
AND CHAIRMAN OF FOREIGN  
INVESTMENT PROMOTION BOARD

ODISHA IS ONE OF INDIA'S major mining states and its development strategy aims at promoting mineral-based industrialisation. However, some non-government organisations (NGOs) are opposed to mining because of its adverse effects on the environment and local communities living in mining areas. The problem is further complicated by the fact that Odisha's large mineral deposits are located in biodiversity-rich forest areas which contain the catchment of its major rivers and also provide the habitat for its poor tribal population.

Some groups, mostly NGOs, argue that mining is an inherently unsustainable activity as it exploits a community's non-renewable resources. However, these

resources have no value if these remain permanently under the ground. A region's mineral wealth must be developed as minerals in the ground are a dormant asset. Using mineral production to sustain economic well being is important for local communities, the regions blessed with mineral resources and the entire nation itself. For many backward states like Odisha, mining underpins industrial development which in turn leads to technological upgradation, skill development and economy diversification.

Thus, a balanced and positive view of mining enterprises needs to be encouraged as production agents, with the ability to turn non-renewable resources into economic gain which can generate sustainable development in the community where they operate. This puts a great responsibility on mining companies. Only by shaping policies and practices, which conform to this view supporting sustainable development, can industry ever hope to earn its 'social license to mining'.

Sustainable development has many dimensions – economic, environmental and social.

- (1) A mining enterprise must operate to attain economic viability by adopting scientific mining practices that allow waste reduction and resource conservation;
- (2) It must take appropriate environmental protection measures to mitigate the negative environmental effects, especially in areas of waste dump and land management, and air and water pollution; and

(3) It must take appropriate social and economic development measures in its area of operation.

While all these can be discussed at length, this article addresses the issue of a mining company's obligation to contribute to the sustainable growth of the local community (in which it operates), by leaving behind institutions and infrastructure that will support the community beyond the life-cycle of the mine.

Traditionally, government and mining companies were considered the only two core stakeholders who negotiated mining terms. Increasingly a third direct stakeholder emerged on the negotiating table – the local community, whose interests, both short and long term, are materially affected by mining projects. Locals or people residing in mining areas must be distinguished from other advocacy groups including non-government organisations (NGOs), basically non-core actors in mining with broader political and ideological objectives and interests. Mining companies must take note of this reality.

Mining, although an unsustainable activity in a sense, can also be viewed as the transformation of a finite natural resource into other forms of capital e.g. physical infrastructure or human capital, derived from the proceeds of mining activities. Through local area and community development, mining companies must make sure that local communities are left with other forms of resources or capital once the mine is depleted.

To this extent, local community development becomes a corporate business obligation/responsibility, distinct from corporate social responsibility which has an element of charity implicit in it. In other words, financial resources spent on such development must be a part of the costs of doing business of production and sale of minerals.

Mineral development generates both benefits and costs. There are private costs and benefits for mine owners; there are also social benefits (like local or regional development) and costs (environmental degradation, disruption of social fabric in mining areas, alcoholism, crime etc.). However, the distribution of benefits and costs are not fair or equitable; most benefits go to mining companies where as social costs are borne by local communities, resulting in a 'resource curse' for people living in mining areas. To counter this, it is necessary to involve

all direct stake holders, including local communities, in decision-making and devise a benefit-sharing system, fair to all the parties. This must involve:

- Stakeholder (community) engagement in relevant decision-making, particularly in areas that materially affect them
  - Improvement of community access to services, especially in health and education
  - Physical and social infrastructure development
  - Social capital formation by facilitating access to education and skill- training in the communities they operate
  - Remediation of disturbed land and of the surrounding economy after mine closure
- Additionally, original land owners and communities should be compensated by providing an equitable settlement to displaced persons without heavy economic burden on them. Sometimes it

is argued that levies collected by the government, in particular royalty payments, should finance these costs. But that is missing the point, as royalty charged is neither a tax nor a fee but a payment made by the lessee of a mining lease to the lessor as a consideration for consuming the sub-soil property (mineral) by operating the mine with his labour and enterprise.

In developed countries and even in more advanced states in India (like Goa) where the level of education and awareness among local communities is high, mining companies are already taking positive initiatives in this area. Their counterparts in the relatively backward regions like Odisha can ignore these developments only at their peril!

*Many other professionals have their takes on mining, its effects and its ethicality as an industry.*



**Mr. Raghunath Mohanty**, Hon'ble Minister, Industries, Steel & Mines, Parliamentary Affairs, Government of Odisha

**Q.** What are the challenges for Odisha's mining ministry?

**A.** The challenge is to exploit Odisha's rich mineral resources like iron ore, bauxite, chromite, coal and manganese, using cutting-edge technology and adding attractive value in the form of end products. Chief Minister Naveen Patnaik has focused on judicious resource exploitation covering fair practices in mineral handling with punitive action against wrongdoers.

**Q.** How is the Odisha government creating workable mining conditions?

**A.** As per the MMDR Act, all allotted mines should be made workable. The state government will ensure that all mineral resources are utilised judiciously. The Odisha government is taking measures to provide a congenial atmosphere to industrial houses for value-addition of the mineral resources within the state itself and also ensuring that local opinions are responsibly considered.

**Q.** Mining and tribal development are integral to Odisha. How does the state expect to arrive at a balance?

**A.** Since most Odisha mines are located in tribal belts, the government is protecting the interest of tribals through socio-economic development covering education, healthcare, communication networks and social security. On the other hand, any ecological violation by industrial houses and individuals will be addressed seriously.

**Mr. D. K. Roy**, Director of Human Development Foundation

**Q.** What is the basis of the opposition to mining by NGOs?

**A.** There are a number of reasons:

- The lack of government transparency concerning the allocation of mining leases.
- Distrust of corporates based on their societal and ethical responses
- No corporate transparency, whereby they work closely only with the government and not with the local community, civil society or other stakeholders
- NGO allergy for the private sector
- The need for spokespersons of certain NGOs to establish themselves as custodians of public policy and guardians of the underprivileged

- Government silence on civil society concerns, raising public suspicion
- Inadequate communication between corporates and civil society.

**Q.** Will the success of Odisha's mining industry catalyse the state's growth?

**A.** I firmly believe that the success of Odisha's mining industry is critical for its development.

**Q.** Some international activists are raising concerns over mining activities in relation to tribals.

**A.** Raising concerns from within the country, particularly local communities and other stakeholders, is welcome. But concerns by international activists are neither genuine nor legitimate. The government should ensure the

implementation of effective programs for peripheral development, socio-economic development of the affected and corporate participation involving the industry, stakeholders and civil society. Community involvement and community monitoring systems are critical for inclusive growth.

**Q.** How can corporate social responsibility be integrated with mining?

**A.** Corporates are not doing anybody a favour by embarking on CSR initiatives; it is their duty. These CSR initiatives should be taken up in consultation with the government, local community and other stakeholders and when done this way, it should not be difficult to integrate CSR with mining activity.

**Mr. Surendra Kumar Sadangi**, Managing Director, Geomin Consultants Pvt Ltd

**Q.** How do you assess Odisha's mining potential?

**A.** Odisha is endowed with a considerable proportion of India's mineral wealth covering bauxite, chromite, coal, iron ore, manganese, nickel, mineral sands, china clay, quartzite, copper, vanadium and cobalt. The state is also a major supplier of coloured precious and semi-precious stones.

Despite adequate infrastructure, Odisha's mineral resources are underdeveloped. My understanding is that if Odisha exploits its mineral potential, it would facilitate the development of various downstream mineral-based industries like iron and steel, ferro alloys, alumina and aluminium, cement and refractories, thermal power, coal washeries, chemical manufacture (based on chrome and manganese), granite cutting and polishing, among others. We believe that a combination of vast mineral reserves and mineral-based downstream industries could emerge as a major driver for the state and country.

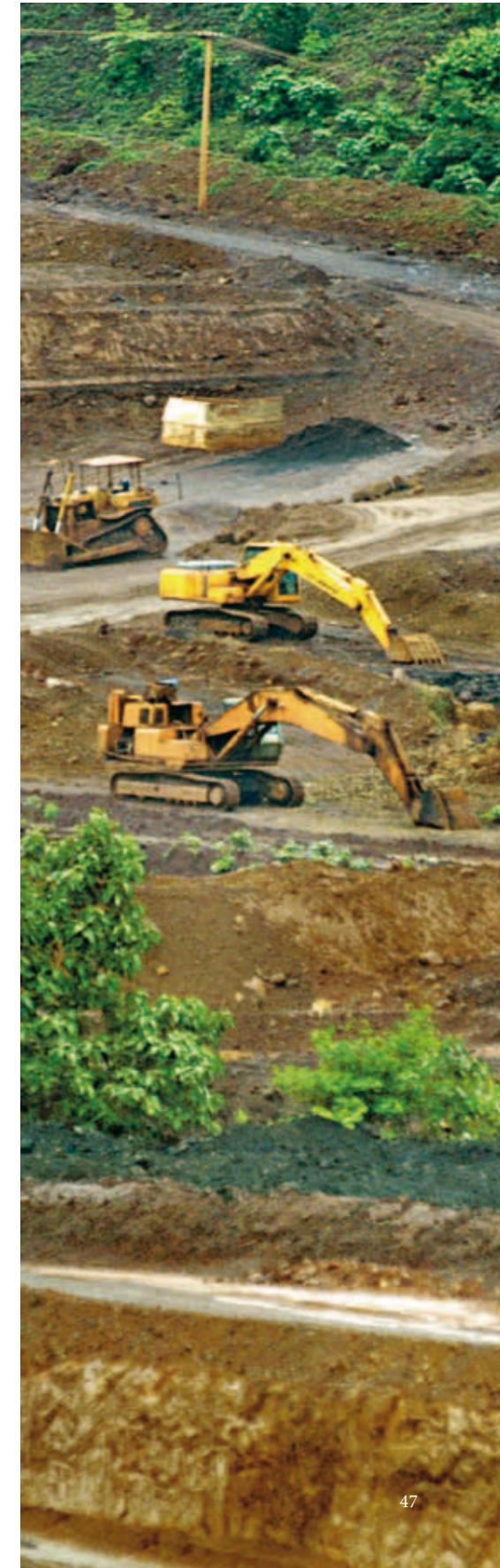
**Q.** How can mining challenges faced by corporate houses be addressed constructively?

**A.** Rampant mineral exploitation (unscientific and unlawful mining practices as well as unorganised waste dumping) can cause environmental problems. These challenges need to be integrated in conventional business practice. Corporate houses dealing with mineral development should devote more attention to environment preservation, social integration and effective governance, which translate

into best global mining practices and the proactive management of environmental, socio-economic and infrastructural issues. Corporate houses also need to prioritise peripheral development that improve health and education in their regions of focus.

**Q.** As a scientist what is your opinion on the NGO movement against mining?

**A.** Ironically, despite possessing abundant mineral resources, Odisha is still regarded as poor and backward. The reason: lack of responsible mineral exploitation. Local support can be won over only by highlighting the positive mining impact across a region. It is my conviction that scientific and systematic mine development can maximise positive socio-economic impact. This is already evident in mining belts around Panchpatmali, Koraput, Lanjigarh belt of Kalahandi, Jharsuguda, Joda-Barbil sector of Keonjhar and Talcher-Angul belt, among others. A number of NGOs instigated a contrary perception among uneducated simple tribals, obstructing mineral development and serving only NGO interests. I must state that their claims of 'harmful environmental effects' arising out of mining are ill-informed. No mining activity can damage the socio-economic condition of the region; on the contrary, this will only improve overall environment and infrastructural conditions. NGOs should closely monitor developmental programmes likely to be implemented by the mining companies which will give them a better holistic perspective of the positive changes being carried out.



THE CHALLENGE IS TO EXPLOIT ODISHA'S RICH MINERAL RESOURCES LIKE IRON ORE, BAUXITE, CHROMITE, COAL AND MANGANESE, USING CUTTING-EDGE TECHNOLOGY AND ADDING ATTRACTIVE VALUE IN THE FORM OF END PRODUCTS.

# ADORNING THEIR SPACE



## GLORY RUN

Anuradha Biswal's Odisha's 100 m national track record nine years ago (13.38 seconds) during the DDA-Raja Bhalendra Singh National Circuit at the Nehru Stadium in Delhi, 2002, still stands! Her motto: 'Compete with yourself.' Says Anuradha, "I was heartbroken to leave home in Rourkela to continue my training. My mother said: 'If you go to the hostel, you will soon run international races.' I participated in the SAARC games in 1991 at Sri Lanka. I then went on to win a bronze medal in the 100 mt hurdles and a silver medal in the 100 mt relay event at the Asian Games in Singapore in 1992. I have won total of 179 medals." How can the State help? She replies: "A sports medical centre is crucial, with efficient, qualified doctors. We also need more corporate support."



## GRAND AMONG CHAMPIONS

Kiran Manisha Mohanty. First person from Odisha to become a Grandmaster. Won her third Woman Grandmaster Norm at an International Chess Tournament in Bangladesh. Became the first person in the men's and women's section in Odisha to become a Grandmaster. Started playing chess at the age of 9, inspired by parents. Took it seriously from the age of 12. Became National Women A champion in 2007. Became joint champion and got 1st Women Grand Master (WGM) norm. Biggest inspiration is her father Kishore Chandra Mohanty. Considers chess more important than her studies. Goal is to become women's world champion.



## MOTIVATION PERSONIFIED

Padmini Rout started playing chess because of her father's passion for the game. Today, she is a Woman Grandmaster with a number of achievements to her credit: Asian Youth Girls Chess Champion in 2005 and 2006, the National U13 Girls Chess Champion in 2006, the World U14 (Girls) Champion in 2008 and the Continental Asian Junior Girls Champion in 2009. She won the third position in the Asian Junior (Girls U20) Championship and the World Junior Championship (Girls) in 2010.



## STROKE OF LUCK

Shradhanjali Samantaray went on to become one of Odisha's greatest footballers ... by chance. She was playing kho-kho when Chandan Chanda (boy's team coach) proposed a women's team to participate in the Federation Cup in 1992. Shradhanjali shrugged 'why not.' There was no looking back. Thereafter Samantaray - an ardent Maradona fan - went on to lead the Indian women's football team in the qualifying round of Asian Football Confederation Championship in Vietnam. "Secret of success? Hard work. My biggest competitor? Myself."



## PURE PASSION

Pratima Puhan has been rowing from age 12. Her reason? Her love for water. She started rowing to stay close to water when coach Joe Jacob noticed her flair for the sport. Since then, Padmini has competed in numerous national and international championships, including those held in Switzerland, Brazil and China. Her recent achievement - bagging three gold medals at the 34th National Games at Jharkhand. Her inspiration lies in her family and friends who have supported her all the way. Next on her agenda - the Olympics!



## RUNNING AFTER DREAMS

Shrabani Nanda, Indian woman sprinter from Kandhamal district, was first noticed at talent spotting programme at age 10 by Coach N. M. Deo. She continued to win medals at various meets in 100 and 200m events, her latest achievement being a bronze in the 4x100 mt relay event in the 2010 Commonwealth Games in Delhi. Determined to balance academics and sports. Currently training in Australia as part of an initiative by the Mittal Foundation for the 2012 London Olympics, the only one from Odisha. Cited as a potential gold medal winner by the Foundation among athletes from India. "Sprinters are born," she smiles, "Not made!"

# KISS OF LIFE

How Kalinga Institute of Social Sciences is reshaping lives in Odisha

Achyuta Samanta. Obscure Odisha village. Fatherless at four. Seven siblings. Mother doing menial jobs. Typically impoverished rural Indian family.

So what's different?

This is: the boy remembered. The boy resolved. The boy taught. The boy saved. The boy invested. In doing so, the boy (then young man) ventured to create a school that would go further than any other he had known.



**M**OST PEOPLE WOULD establish schools to teach underprivileged students, period; Samanta's school would exclusively educate tribals.

– Most people would set up schools to provide education to those who have easy access to education and are already at a certain social standard; Samanta resolved to provide education to those below the country's poverty line.

– Most people establish schools to provide an academic education; Samanta's would provide academic-cum-vocational education.

– Most people would be happy educating tribals from their pin code; Samanta's school would eventually take in tribals from 13 state districts and neighbouring states.

– Most people would have created a modest school in an underprivileged pocket; Samanta's school ranks as one of the best of its type in the country.

– Most low-cost schools for the underprivileged in India take students in every morning and send them home each afternoon to save on lodging costs and infrastructure; Samanta would create a free residential school.

– Most schools would focus on the written text; Samanta's would focus on tribal culture, heritage and tradition.

– Most created a school and said 'enough;' Samanta went on to create a cluster of villages with a 50-bed hospital, blacktop roads, electricity, post office, bank, police station and health insurance coverage for all villagers.

### Turning dreams into reality

The most under-privileged pockets. The most under-privileged section. The largest educational facility. The largest transformational opportunity.

When you reconcile all these challenging realities, some amazing things can happen. And *have*.

A school that commenced with just a primary section in 1993, gradually added levels, upgrading itself first from primary to class 3 and once the students reached that grade, then to class 7 and so on. It has extended its focus from kindergarten to post-graduation (KG to PG!) coupled with the assurance of guaranteed employment following education completion.

**For what started out as a modest educational initiative in Bhubaneswar with 125 students in 1993 is now the largest free residential educational institution in Asia, covering 12,000 students.**

### Success

So what helped Kalinga Institute of Social Sciences emerge as some kind of education case study in India? "A number of things have fused to create a fairly unique educational model," says Mr. Routray, CEO. "Primarily, the simplistic reality is that we are providing education, but to the thousands of tribals in Odisha what we are providing is 'hope.' And over the years, this sense of hope has come from the fusion of education, vocational training, multi-lingual skills, personality development and the assurance of a job when the student is ready to graduate. In a part of India where people have struggled to access even their basic fundamental rights, this aggregate value represents a big opportunity leap."

When it comes to development impact, this point needs to be comprehended for its sheer impact. A tribal newborn is just another statistic in most parts of the country. The child will learn a little and waste a lot. The youngster will eke out a modest living or turn to crime. The man will either marry and live within his means or drink himself and the family to misery. Family to family. Generation to generation.

And then comes Kalinga Institute of Social Sciences (KISS). The child is bundled away to this school by relieved parents. No fees need to be remitted. The child is well taken care of. The child returns and offers the family a keyhole

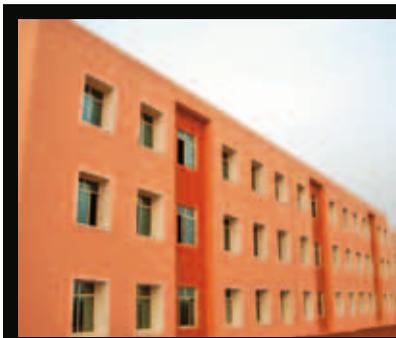
insight into a better world. The student acquaints himself with the advanced supports and technologies of a modern world. The young man graduates and gets a job. The young earner sends his first paycheck home. A family is ready to shrug off the yoke of centuries and climb into a better social orbit. "What makes us different is that we do not encourage students to migrate to cities and escape into another world," says Mr. Routray. "We encourage students to return to their roots, contribute to the environment that they originated from and directly raise the tribal standard of living."

The word has indeed spread. KISS has accommodated students from 60 tribal communities, of which 13 have been classified as primitive. And the result is that every single year, KISS receives some 50,000 student applications from all over Odisha.

### Proof of the pudding

So how good is the standard of education at KISS?

The course and syllabus is prescribed by the Directorate of Elementary, Secondary and Higher Secondary Education, Government of Odisha. The medium of teaching in the school is Odia with English as the compulsory subject in all classes. The usual school day stretches from 7 am to 5.25 pm. Vocational training covers tailoring, computer training, phenyl making, *agarbatti* (incense sticks) making, carpentry, food preservation-cum-processing, gardening, plantation, floriculture, pisciculture and animal husbandry. Further, within vocational activities, students have the choice of sports, music and yoga. The subjects covered under graduation comprise science (physics, chemistry, mathematics, botany, zoology), arts (political science, economics, philosophy, psychology, history, sociology, education, home science, tribal study) and commerce (accountancy, costing, business law,



**KISS STUDENTS HAVE SOMETHING TO SHOW FOR THEIR ABILITY. KISS STUDENTS REPORTED A 100% PASS PERCENTAGE SINCE THEY BEGAN SITTING FOR HSC EXAMINATIONS IN 2002.**

auditing, business organisation and business economics). The post graduation courses comprise physics, chemistry, mathematics, botany, zoology, political science, philosophy, economics, history, anthropology, tribal study, accountancy, sociology, English and Odia.

Supporting this are various facilities and services: classrooms, hostel, dining hall, computer laboratory, science laboratory and playground.

The result is an opportunity as good as anywhere in urban India for Odisha's rural tribals to make the giant opportunity leap and liberate generations.

### Result

KISS students have something to show for their ability. "KISS students reported a 100% pass percentage since they began sitting for HSC examinations in 2002. In 2009, eight students figured in the first division. In the science plus-two examination seven figured in the first division and 18 in the second division. One science plus-two student stood first in the project preparation competition of SCSC (State Children Science Congress) and participated in National Children

Science Congress held at Maharashtra in 2007. Another student figured second in the poster competition in the SCSC (State Children Science Congress) programme. Another class 9 student participated in Indian Science Congress held at Vishakapatnam in 2007. This clearly demonstrates that we have successfully raised students from their diverse tribal backgrounds into nationally-comparable academic standards. We also gave them an opportunity to rub shoulders with the others in the country. This means that when they walk out of here, they will be welcomed at Kalinga Institute of Industrial Technology through reservation, where specialisation options include engineering, medicine, management, law, dentistry, media and several diploma courses, among others. Thereafter, they will be completely employable, no question."

### Confidence

What most employers will tell you is that academic achievement is all fine, but when it comes to being able to hold one's own in a conversation or making a personality impact, rural students have a long way to go.

And it is here that KISS students have made a mark. "We don't just teach here," says Mr. Routray. "We create an environment that makes our students confident."

Ask anyone about student confidence at KISS and they will immediately mention two instances.

**One**, when Laxman Hembam, a class nine student from a primitive tribal group called Juang, presented a paper before a 1,500-strong TUNZA International Children and Youth Conference on Environment – 2009, organised by United Nations Environment Programme in Seoul. "This was absolutely unprecedented for this young boy. It was a 'growing up' experience – and yes, the paper was a huge success," says Mr. Routray.

**Two**, when KISS put together a team of students, trained them in rugby (none had seen a rugby ball before in their lives) for four months, sent them to the UK for a 10-country tournament, they played five matches and returned after beating South Africa in the final. "I thought I knew something about training youngsters in rugby," says Paul Walsh, the Englishman who trained the team from scratch. "But they taught me one hell of a lot in what a committed bunch of kids can do through team working. That one victory convinced every single student at KISS that they could emerge as winners anywhere in the world. The impact of this will be visible even after they have passed out of this place."

### Looking ahead

So where does KISS go from here? "Our agenda is far from over," says Mr. Routray. "KISS plans to replicate its model across 10 Odisha districts so that students can be close to their families while learning in our residential schools. Moreover, the model must be sustainable: once students graduate, we will employ most of them as teachers, creating a model of livelihood and learning that will transform Odisha and enable it to regain its rightful place among the most developed states in India."



"Initiatives like KISS should be replicated across every state in India."

– Sri Kantilal Behuria,  
Union Minister of Tribal Affairs

"KISS is a model that everyone can learn much from. Not just in India but across the entire world."

– Ms. Bomo Edna Molewa,  
Senior Cabinet Minister of Social  
Development, South Africa

"Seeing the relevance, potential and achievements of KISS, it falls nothing short of a wonder. A miracle that could transform destinies and change lives."

– Dr. APJ Abdul Kalam,  
Former President of India

"Mr. Achyuta Samanta is my role model."

– Prof. Richard Ernst,  
Nobel Laureate

"KISS is evidence that the message that Gandhiji had spread throughout his life has not only been received but converted into feasible reality. It is a second Shantiniketan..."

– Mahasweta Devi,  
Magsaysay Award winner

"Mr. Achyuta Samanta... fulfills the 'American Dream' through his work while living life according to the principles of Mahatma Gandhi."

– Mr. Timothy J. Roemer,  
US Ambassador

Feedback

# “DHAMRA PORT WILL CATALYSE ODISHA’S GROWTH.”



Mr. Santosh Mohapatra, CEO, Dhamra Port Company Limited, discusses how the infrastructure showpiece will unleash economic prosperity across Odisha.

**Q. What was the rationale for a port at Dhamra?**

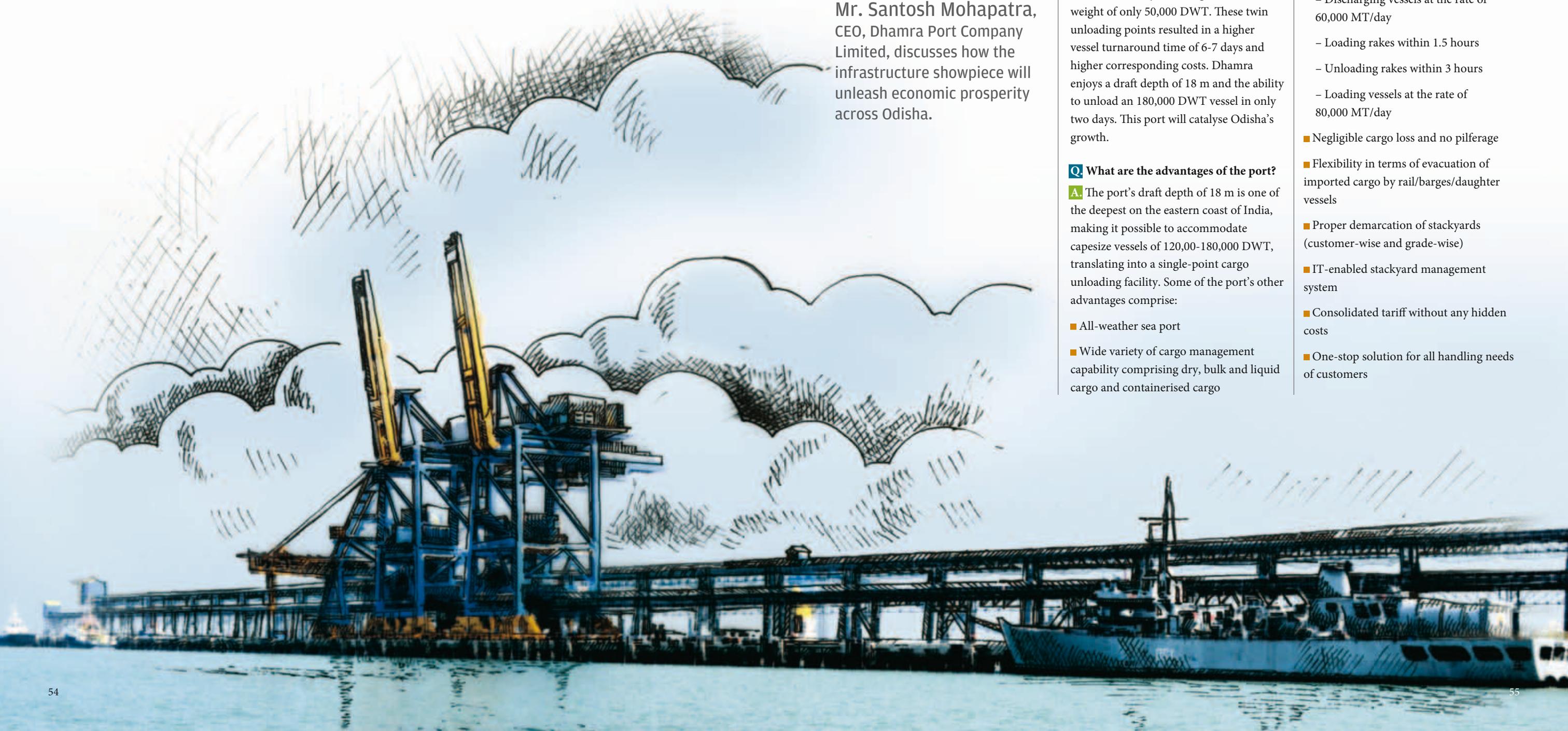
**A.** A customer appraises the ability of a port to turn around the largest of vessels in the shortest time. When we studied the Haldia and Paradeep ports (almost 600-km on either side), this is what we found: a 120,000 DWT vessel would anchor at Paradeep to unload 70,000 DWT, capitalising on its 12-13 m draft, then sail to Haldia for unloading the rest of the cargo due to a lower draft depth of 6-7 m and ability to manage a maximum weight of only 50,000 DWT. These twin unloading points resulted in a higher vessel turnaround time of 6-7 days and higher corresponding costs. Dhamra enjoys a draft depth of 18 m and the ability to unload an 180,000 DWT vessel in only two days. This port will catalyse Odisha’s growth.

**Q. What are the advantages of the port?**

**A.** The port’s draft depth of 18 m is one of the deepest on the eastern coast of India, making it possible to accommodate capesize vessels of 120,00-180,000 DWT, translating into a single-point cargo unloading facility. Some of the port’s other advantages comprise:

- All-weather sea port
- Wide variety of cargo management capability comprising dry, bulk and liquid cargo and containerised cargo

- Berthing of two capesize vessels at any given point of time with discharging and loading operations being carried out simultaneously.
- Expected savings of USD 5-7 per MT in sea freight (capesize vis-à-vis panamax).
- Expected savings of USD 2 per MT due to efficiency in discharging/loading of vessels (panamax vis-à-vis panamax).
- Fully-mechanised and efficient cargo handling system capable of:
  - Discharging vessels at the rate of 60,000 MT/day
  - Loading rakes within 1.5 hours
  - Unloading rakes within 3 hours
  - Loading vessels at the rate of 80,000 MT/day
- Negligible cargo loss and no pilferage
- Flexibility in terms of evacuation of imported cargo by rail/barges/daughter vessels
- Proper demarcation of stackyards (customer-wise and grade-wise)
- IT-enabled stackyard management system
- Consolidated tariff without any hidden costs
- One-stop solution for all handling needs of customers



Origin/destination	Rail distance (km)	Origin/destination	Rail distance (km)
Kalinganagar	122	Salboni	275
Keonjhar	220	Burnpur	460
Banspani	290	Purulia	447
Talcher	260	Durgapur	481
Angul	272	Tatanagar	370
Jharsuguda	483	Bokaro	496
Rourkela	537	Raigarh	545

## Dhamra's multi-modal connectivity

**Rail:** The port has acquired a 125 m wide corridor from Dhamra to Bhadrak to accommodate two rail tracks and a four-lane road along with service lines comprising transmission and pipelines. During Phase I, the Company is constructing 62-km rail connectivity (single-rail track) from Dhamra to Bhadrak/Ranital Link Cabin on the main Howrah-Chennai line. Trains will run up to Dhamra Terminal Yard wherein handing over and taking over of rakes will take place between the Indian Railways and the Company. The railway line will be operated from DTY with the help of a centralised traffic control signalling mechanism. The nearest railway station is Bhadrak, 62-km from Dhamra on the Chennai-Howrah line. Bhadrak is 143-km from Bhubaneswar and 297-km from Howrah. A single track broad gauge line was constructed by the Company from Bhadrak/Ranital Link Cabin to Dhamra.

**By road:** Dhamra is connected by road with Bhadrak (82 km), the nearest major town on the National Highway 5. The distance between Dhamra and Bhubaneswar is 205 km.

**By air:** The nearest airport from Dhamra is Bhubaneswar, the state capital of Odisha.

**Q. Why is the port's location strategic?**

**A.** Dhamra port is proximate to mineral-rich Odisha, Jharkhand and West Bengal. Odisha (65 bn tonnes), Jharkhand (76 bn tonnes) and West Bengal (28 bn tonnes) account for almost 63% of India's coal reserves. Besides, Odisha possesses 26.5% of India's iron ore reserve. So the Dhamra port will open up a number of export-import opportunities for the mining and metals industries.

**Q. What kind of company is addressing this large project?**

**A.** The Dhamra Port Company Limited is a 50:50 joint venture between L&T and Tata Steel. DPCL has been awarded a concession by Government of Odisha to build and operate a port north of the mouth of river Dhamra in the Bhadrak district of Odisha on BOOST (Build, Own, Operate, Share and Transfer) basis for 34 years (including four years for construction). The lease period may be renewed or extended for two additional blocks of 10 years each on mutually agreed terms and conditions.

**Q. What progress has already happened?**

**A.** During Phase-I, Dhamra Port constructed two fully mechanised berths of 350 m each with backup facilities for handling imports of coking coal, steam/thermal coal, limestone and export of iron ore. Phase-I also includes a 62-km rail link from Dhamra to Bhadrak/Ranital Link Cabin on the Howrah-Chennai line. The estimated capacity of Phase-I is 25 million MT per annum (financial closure in February 2007). Construction

commenced in March 2007; the port is ready for commercial operation. It is important to note that the port received all necessary clearances including environmental clearance from Government of India, consent from Orissa Pollution Control Board and rail traffic clearance from the Indian Railways. So the big message that we want to send out to readers is that we have commissioned on schedule!

**Q. What is the port's master plan?**

**A.** The port's master plan provides for 13 berths capable of handling more than 100 million MT per annum of all cargo types (dry bulk, break bulk, liquid bulk and containerised). The Phase-I capacity will be 12 million MT per annum of coal and 6.50 million MT per annum of iron ore. We are in the process of augmenting iron ore export management capacity by another 6.50 million MT per annum with an additional wagon tippler by June 2011.

**Q. There are allegations that the project poses a threat to Olive Ridley turtles.**

**A.** There are a number of myths associated with the apparent threat to Olive Ridley turtles. The National Environment Appellate Authority upheld our environment clearance and observed: "The area between the low tide line and high tide line in the area to be covered by Dhamra Port expansion project being of clay soil and very sticky, could never become a breeding centre for turtles." The other myth is that the Dhamra port is close to the famous Gahirmatha nesting area. According to the report of the Chief Wildlife Warden, "The site of the proposed port is 30 km from the nesting area by sea and 15 km as the crow flies."

**Q. What is the kind of opportunity awaiting the Indian ports sector?**

**A.** Under National Maritime Development Programme (NMDP), USD 12.40 billion investments across 276 projects will cover berth development, drafts deepening, port connectivity, upgradation/modernisation of cargo handling equipment and other support activities. Private investment is estimated at over USD 7 billion covering the construction and operation of berths and terminals. The NMDP proposes to do in five years what the country has done in 50:

add nearly 546 million MT of new port capacity by 2011-12 as against a current capacity of around 516 MMT. One of the most effective metrics with which to measure national wealth is the current account deficit (excess of imports over exports). In 2010, India's current account deficit was -2.2% of GDP, exports USD 201 bn and imports USD 327 bn. With India's ports managing about 95% of its international trade by volume, we see stronger port infrastructure as critical for strengthening balance of payments.

## The port's promoters

**Larsen & Toubro:** India's premier technology-driven engineering and construction organisation. Responsible for India's first indigenous hydrocracker reactor, the world's largest continuous catalyst regeneration reactor, the world's biggest fluid catalytic cracking regenerator, the world's longest product splitter, Asia's highest viaduct, the world's longest LPG pipeline and the world's longest cross-country conveyor.

**Tata Steel:** The Tata Group is one of India's oldest, largest and most respected business conglomerates. The Tata Group's businesses are spread across several business sectors like engineering, materials, energy, chemicals, services, consumer products, information technology and communications and educational institutes. Tata Steel is Asia's first and India's largest private sector steel company; it is among the lowest cost producers of steel in the world.

**“The Dhamra Port has been conceived as a classic model of a port connecting capital with business, industry with port, demand with supply and rail and road with port for national benefit.”**

# INVEST BHUBANESWAR

A report by Dr. Dhanada Kanta Mishra, Chairman,  
Human Development Foundation

The 'Invest Bhubaneswar' event in Silicon Valley, California (USA), was a first in Odisha history. The Government of Odisha and local businesses formed a cohesive team under the brand 'TeamOdisha' to visit Silicon Valley. Subsequently, a 40-member business delegation, comprising around 20 businesses and 15 government delegates visited the area to create a business synergy.



**B**HUBANESWAR IS ON ITS WAY to emerge as a knowledge hub.

The city is home to several national-level institutions like IIT (Indian Institute of Technology), IIIT (Indian Institute of Information Technology), NISER (National Institute of Science Education and Research), NIFT (National Institute of Fashion Technology), AIIMS (All India Institute of Medical Sciences), XIMB (Xavier Institute of Management – Bhubaneswar), KIIT (Kalinga Institute of Industrial Technology) and Silicon Institute of Technology and Institute of Physics, among others. There are over 35 private professional institutions in the areas of engineering, medical and management studies.

Bhubaneswar's revival was also mirrored in business initiatives. In 2009, the city was declared the third best in India for business by World Bank. Odisha emerged as second-largest investment destination after Gujarat. Besides, with several incubating plug-and-play centres, the region is thriving with technology entrepreneurs seeking relationships with Silicon Valley counterparts.

A high-profile business symposium 'Invest Bhubaneswar' was held on 1 July at Palo Alto, California. Jointly organised by the Orissa Society of America (OSA), the Indo-US Entrepreneurs (TiE), Silicon Valley Chapter, and the Government of Odisha, the mission of this symposium was to connect and network businesses in Bhubaneswar with businesses in Silicon Valley.

Around 120 Silicon Valley investors, sales and marketing professionals attended the event. The event was a success: a USD 2.1 billion investment commitment was forged between several Silicon Valley sales, marketing and business development professionals, connecting with Bhubaneswar-based companies to provide value-added services.

Prabhu Goyal, prominent Silicon Valley visionary, delivered a keynote address titled 'Driving social change through wealth creation'. He promoted Bhubaneswar as an 'investment destination' that can create wealth, bringing social good to the bottom of the pyramid following selective investments.

In a question-answer session, ministers and secretaries answered questions related to MoUs signed by the government and their respective successes, the problems of the Posco-India project and other government plans.

One highlighted issue was the lack of a direct international connection with Bhubaneswar. While the Biju Patnaik Airport at Bhubaneswar is ready to accommodate such flights, the lack of political will between the state and the centre appears to be preventing the opening of Bhubaneswar to international airlines. "Time is money. We cannot expect a CEO of a Silicon Valley company to arrive at Mumbai or Delhi late night and wait for several hours to take a morning flight to Bhubaneswar," says Purna Mohanty, chair of the symposium and long-time Silicon Valley entrepreneur. "Yet another day is wasted before the CEO finally sits down to actual business. This is exactly why only Indian companies set up shop in Bhubaneswar, not international ones."

On 2 July, TeamOdisha met TiE Silicon Valley officials to discuss the possibility of starting a TiE Bhubaneswar chapter. President Vish Mishra emphasised the need to be success-happy as opposed to MoU-happy. Mr Sandeep Agrawal, TiE charter member, delineated the vast opportunities that the market presented in the areas of e-commerce, SEO and mobile internet. He emphasised that Bhubaneswar could emerge as a datacentre hub owing to the combination of surplus power and cheap real estate over competing Tier-1 cities.

As a follow-up to this event, a Silicon Valley delegation visited Bhubaneswar in December 2010 for an investment event attended by over 300 delegates leading to the creation of the TiE Bhubaneswar chapter. Mr. Gilbert Wong, mayor of Cupertino, visited Bhubaneswar to explore the possibility of establishing a sister-city relationship.

The Invest Bhubaneswar Foundation Trust is functional, establishing a networking platform for aspiring entrepreneurs.

The result is that Odisha entrepreneurs now face a bright future, something that appeared distant until not too long ago.

“Odisha is an excellent compilation, which throws light on various aspects of a developing Odisha apart from its rich tourism potential.”

*B.C. Nayak, Special Director, Ministry of Home Affairs, Government of India*

“The magazine is well produced and holistic, making for good reading.”

*Jatin Das (well-known painter), Chairman, Jatin Das Centre of Art*

“Such a magazine makes for an interesting read. We at TRL are especially proud to be associated with various projects in Odisha.”

*Dr. Arup Kumar Chattopadhyay, Managing Director, Tata Refractories Limited*

“The magazine looks really good with informative content and powerful images. A job well done!”

*Prof. B. K. Mishra, Director, Institute of Mineral and Materials Technology*

“The inaugural Odisha issue was magnificent as it highlighted positive developments in the state and its growth potential.”

*Dr. Amitanshu Patnaik, Scientist, Defence Terrain Research Laboratory (DTRL)*

“Odisha was so enlightening that I have made arrangements to make it a part of my library.”

*M. J. Xavier, Director, Indian Institute of Management, Ranchi*

“The magazine highlighted the heritage, industrial and agricultural growth in Odisha.”

*R. K. Bhuyan, Advisor, Senior Consultant Engineers*

“The first issue of Odisha was informative and educative. I now know a little more about the State than I previously did!”

*H. K. Lal, Assistant General Manager, Airports Authority of India*

“The content, design, layout and artwork of the magazine are of excellent quality.”

*Rajen Sahay, Head of Corporate Communications, TRF Limited*

# When millions throng to celebrate the holy Jagannath Rath Yatra



The Rath Yatra (Car Festival) re-enacts the sacred journey of Lord Jagannath along with His brother Balabhadra and sister Subhadra. Three different mammoth and elaborately decorated chariots are pulled by thousands of devotees. Millions of devotees converge on the holy city of Puri to celebrate the nine-day festivities in the month of Ashadha (June/July).

**Stroll into Odisha and walk with the Lords**

Website : [orissatourism.gov.in](http://orissatourism.gov.in)

Online booking : [www.visitorissa.org](http://www.visitorissa.org) | e-mail : [oritour@gmail.com](mailto:oritour@gmail.com)

Call us : 1800 2097 123 (Toll free)

