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# Unintended Collieries: Theorizing People and Resources in India[1]

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## Resource Management in Asia-Pacific

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## Abstract

Unauthorized mines are common features in mineral-rich regions of poorer countries and India is no exception. They come to public attention only when there is an accident causing deaths of miners and creating vulnerability for other people. Whether they are a law and order problem including safety issues, or whether there are important social and economic questions involved has yet to be thrashed out. The mining industry, at regional, national and international levels, is ambivalent towards such mining, confusing unauthorized mines with small-scale mines and drawing the attention away from their informal nature to the size factor.

This paper looks at the problem of such mining in the light of my empirical research on collieries in India. These I call the 'unintended' collieries, especially unwanted by administrators, but in my view serving a significant role in the local economy. I have also tried to theorize the wide occurrence of unintended mines in the light of the 'resource curse' thesis proposed by economists and have found that it fails to explain why local communities indulge in illegitimate activities. I propose that instead of seeing resources as the curse, historical and political economic approaches in understanding community responses to 'resources' and 'development' need to be understood. The alternative thesis is that peasant societies are trying to reclaim a certain part of the local resource appropriated by mining companies and thus lost to them. Therefore, what is seen as illegitimate mining is actually the local community's way of asserting their traditional rights to local mineral resources. Finally, I stress the need for a new moral economy for mining regions in which communities will play a powerful role in the local economic processes.


## Introduction

### Polu Thakur's journey to the netherworld

It had been one of those rare sunny days that light up one's life in between the rainy spells of the monsoon months in India. The evening too was warm and humid, with a clear sky above. Polu Thakur, a first generation migrant from the neighbouring state of Bihar, had just finished his day's work in the tiny thatched makeshift home that doubled as his barber's shop in Samdi village near Sangramgarh colliery in the Raniganj region of eastern India.

After Polu had sat down to eat his evening meal, the villagers heard a sudden loud noise resembling that of a blast, breaking the evening quiet. Curious, as mine blasts usually occur during the working hours of the day, men came out of their homes while women and children peeped out of the window. No one was prepared for what they saw: Polu was going down along with his hut into the ground that was caving in. Polu's flailing arms were visible and cries for help were heard for a few more seconds, and then he was gone. No one ever found his body. No one even dared to search for him. When I reached Samdi next morning, villagers talked as if Polu had never existed.

### The honeycombs of Samdi

Why did Polu die? The answer to the question invites some explanation for the explosion and subsequent sinking of the ground near the colliery. Both Samdi and Sangramgarh are among the oldest collieries of India, located in the Raniganj region some 250 kilometres northwest of the Calcutta metropolis. Raniganj is an old mining region where the colonial British administration first started collieries in late eighteenth century[2]. Sangramgarh is an open cast operation where an 8 ft thick coal seam near the surface has been left by the Eastern Coalfields Limited (ECL), the State-owned mining company operating in the region. The company has instead chosen to work on a lower, 20 ft thick layer, which yields more easily to the heavy machines used these days for mining. Where this upper, 8 ft thick, layer of coal has been exposed by mining of the lower seam, it has been cut into a maze of honeycomb-like labyrinths, which often extend for considerable lengths under the surface. These often cave in giving rise to accidents like the one described here. The tunnels were driven into the seam by local people, ordinary villagers, and do not belong to any mining company. This activity is illegitimate in the eyes of the law, and the villagers are seen as criminals. Still, one has to remember that they are not major criminals – not even petty ones by any standard - and this activity provides them with a means of subsistence. On or around this land are

villages like Samdi containing homes of people like Polu, some of whom have lived here for generations, whereas some have migrated over various lengths of time in search of a better future in the colliery region. This surface also contains roads connecting Samdi to Asansol, the nearest major urban centre and railway junction, and location of ECL officers' and staff quarters. These are, however, 'official'. Polu is a *persona non grata* in that he lived on land leased by the mining company, and hence did not exist in official records at all. A non-person. Both operations - on the lower as well as the upper layers - go on simultaneously though the honeycombs are not exactly 'intended' collieries. The coexistence in eastern India of these honeycombs with some large coal mines in a near-symbiotic relationship is similar to what exists between the formal and informal sectors of the Indian economy; the unintended collieries are, however, known widely as 'illegal' mining. When they come into the news, or indeed are mentioned at all, they are described as illegal, local people call them so, and the administration knows them as such.

Polu's case is not an isolated one. Neither is Samdi a unique place. There are innumerable instances of such mining. These activities make it to the pages of local and regional newspapers when there is an accident and some lives are lost. The number of lives lost usually determines which page in the newspaper the news item will be in, and the media exposure determines for how long the district administration and the mining company will be engaged in a verbal battle about whose responsibility it is to stop this activity. Often, due to excessive media exposure, there are no takers for the dead bodies when they are eventually dug out of the rubble, if at all. Even the relatives of the deceased have learnt to mourn in silence, something most unusual to Indian traditional cultures, to avoid admitting that they were involved in any way in 'illegal' mining.

## How not to know things

The mining company Eastern Coalfields Limited (ECL) is the largest owner of land, the prime employer of people and mover of resources in this single-industry region - prefers to overlook the coexistence of such mining, or sees it as a law-and-order problem. It complains from time to time to the local district administration of 'theft' from its premises. The bureaucratic reply is usually that the company should look after its own premises and property with the help of its large fleet of security guards and specialized industrial security force[3]. More often than not, the matter ends there after a few exchanges of letters or at best 'high level committee' meetings. No special measure is initiated, and the case remains as opaque as ever. Life goes on as usual in the Raniganj coalbelt; those whose lands have been acquired by the mining company do the rounds for a job and some are even successful, trade unions organize meetings, protests and token *hartal*s (strikes), people like Polu wander in from surrounding states lured by the brisk business opportunities thrown up by the rapidly transforming mining-urban settlements. Experts from the Coal Mines Planning and Design Institute Limited (CMPDIL)[4], another subsidiary of Coal India Limited (CIL) that controls coal mining throughout India[5], research how and where the imported longwall technology can be used 'to improve productivity'. Officers of the Director General of Mines Safety visit areas like Sangramgarh and declare it as one of the 'unsafe' areas of the region. In the faraway capital city of Delhi, the Ministry of Coal traces out new policies of restructuring and liberalization, and the World Bank prepares the 'mitigation plan' for the large-scale displacements that will accompany big investments in the coal sector now that the Indian economy has become 'liberalized'. In local headquarters of ECL, various Consultative Committees (see GOI 1992) and Advance Environmental Planning Groups[6] develop environmental designs, which remain beyond the access of ordinary citizens and gather dust in office shelves.

## An invisible economy?

Underneath this formal mining industry about which the Government of India provides official statistics of production and make available through its webpages huge amounts of information (see http://www.coal.nic/vscoal/abtcoal.htm http://www.coal.nic/in for example), lies this unseen, unknown, unacknowledged, invisible, underground, opaque, illegitimate, informal coal economy. It constitutes not just one particular sector within mining - it is a complete economy by itself with its intricate networks and complex linkages going deep into every aspect of life in the Raniganj region.

Such mining is not exclusive to India; it occurs in large numbers and employs a large number of people in several poorer mining countries of Africa and Asia - Niger, Peru and the Philippines (Jennings 1999). The total aggregate production from these illegal mines is impressive though no specific data is available. For example, in coal-starved neighbouring Bangladesh, which did not have any legal trade relation with India till the opening of the economy, many brickfields around Dhaka prefer to use 'Indian coal' that comes partly from these mines. Coal, once on the surface, does not have a stamp telling from where it originates. The 'black' coal economy thus has ramifications over the entire spectrum of geography, economy, society and politics.

Quite naturally, therefore, the attention of international decision-makers has been drawn to this kind of mining since 1970s. The notable fact is that at the same time, much attention has been drawn to small mines in different countries, including especially the developing ones (ILO 1999). The Government of India too recognizes the 'small scale' mines, which are actually different from unauthorized mines as they may have a legal status.

## Let us ask why

Although the global attention given to small scale mining has something missing, it has provided impetus for taking a closer look at the unauthorized mining activities. The attempts by international bodies encourage an interest in why such mining occurs and persists in mineral-rich areas of so many developing countries in spite of the best intentions of the governments and mining companies. What factors force ordinary humans to turn into unlawful citizens? Is it the lure of quick and high levels of profit or some other compulsion that drives illegal mining? Are such mines compatible with the notion of 'development' that mining is supposed to bring to mineral-rich areas of poor countries? Are the terms ‘unlawful’ and ‘criminal’ just a construct to ensure that the ‘big boys’ are the only ones that count?

The time has come to explode a few myths surrounding illegal mining activity. Who works in these mines? Are these run by coal smugglers and *mafia* as claimed by bureaucrats and the police? What 'huge' profits spur them on to take such immense risks and endanger lives? What are the linkages between the formal and informal mining sectors - is it the 'blessings' of local police that encourage the villagers or are there economic forces that drive these unintended mines?

In this paper, I shall attempt to look into these questions in the context of my research in eastern India, especially the Raniganj region. Besides the fact that I grew up near it, I have done research-oriented fieldwork in the region for over a decade now, and have made personal contact with people at various levels. Much of what I have written here, therefore, is from my subjective knowledge of the social and economic issues within this region. I accept it that there may be other ways of looking at the problems dealt with here. Indeed, I could not do away with the 'outsider's gaze' and did not think it was necessary too. Still, my views are different from those of the mining establishment within India and at the international level. Above all, I was far more constrained by finances, access to official data and resources such as high-level discussions, than such agencies.

Raniganj is the oldest coal mining region of India and still contributes significantly to the national coal production, though over the years its share has declined to sixth position among the eleven subsidiaries of CIL, in spite of increased production. In the early days of mining, local landlords called *zamindar*s were enthusiastic about opening collieries, but gradually much of the ownership went into the hands of privately owned companies. Post-nationalization was the period of real expansion of mining in Raniganj. At one time the Raniganj coal fuelled the British empire - typical of an old mining region. Raniganj's economy too shows signs of aging, with old unproductive underground mines manually operated by a highly unionized labour force. The region has a complex history of gradual social transformation along with the changes in its landscape and was more or less a low-productive rice-crop cultivation area with only patches left of the previous *jungle mahal*. Raniganj today has a significantly higher level of urbanization than the rest of the state of West Bengal or India (Lahiri-Dutt 2001).

The ownership of land in Raniganj region had passed on from local *adivasis* to agricultural castes long before coal mining caught on as a popular business enterprise with the *zamindar*s. Yet, the Santhals and a low caste called Bauris, who later became known to colonial administrators as 'traditional coal cutters of Raniganj' (Paterson 1910), continued to remain closely attached to their lost land by leaving the mines for agriculture-related work. This encouraged the mine-owners at one time to bring in outside labour, who later came to dominate the formal industrial labour force. Naturally, when the agricultural sector decayed, local inhabitants were forced to seek jobs elsewhere. Where will they go in this single industry region? We shall explore these connections in the course of this paper.

In spite of its specificities, Raniganj may give us a clue to understanding the larger scenario, or the various urgent issues that need to be brought into the open in the context of mineral resource management. It may help us to understand:

- the role of 'community' in mining;
- if mining constitutes a 'curse' instead of the resource *per se*;
- the way development has shaped the third world;
- the way local communities enforce their traditional rights over the land in the absence of a participatory process; and
- how a formal and an informal sector continually supplement and complement each other in mining.

With this paper, I have deviated from the 'official' and authorized writing format. This is fully intentional. The paper is divided into five main parts and several sub-parts. There may be repetitiveness and circularity of reasoning; what gets a mere mention in one place may get a paragraph in another, more connected, area. The story is still in the process of unfolding and is an intertwined one. It rises from the real world and makes us confront at once the need to change this world. The methodology for researching the contents of the paper was purely empirical, and qualitative; repeated visits and personal interviews and extensive consultation of field notes upon return from each trip. My intention here is not the provision of quantitative data as a 'solid' proof of the existence of unintended collieries or their scale but to clearly understand their reasons of occurrence and nature. My hope is that this paper, if read at all by people who matter, will at least draw attention to hitherto unexplored ways of thinking about 'unauthorized/illegal' mining.

## Theory and Reality

### The size factor

Let us deviate a little and try to examine the position of the Indian state with regard to smaller mines. In March 1993 the Government of India announced the National Mineral Policy, which noted isolated deposits of minerals lending themselves well to economic exploitation through small-scale mining. With their modest capital requirements and short lead-time, they also provide employment opportunities for the local entrepreneurs. It was decided that 'efforts will be made to promote small-scale mining of small deposits in a scientific and efficient manner while safeguarding vital environmental and ecological imperatives. In grant of mineral concessions for small deposits in scheduled areas, preference shall be given to the scheduled tribes'.

About 55 minerals are being exploited in India in about 3,600 working mines (excluding coal). Of these about 400 may be considered as large mechanized open cast or underground mines. The rest are small mines or 'B' class mines as per MCDR, 1988. It has been roughly estimated that the share of the small scale sector is only about eight per cent of the monetary value of mineral products but 18 per cent of the total employment in mining.

Whatever the size, all mines in India come under a plethora of government rules and regulations[7] - the Mines and Minerals (Regulation and Development) (MMRD) Act, Mines Act, Forest Act,

Environment Act. With their inadequate technology and problems of financial resource mobilization, they suffer from innumerable handicaps leading to major inefficiencies (noted among others by Vicziany 1998, as one of the main factors in their lacklustre ecological performance). However, I emphasize here, that the case of unauthorized or illegal mining has nothing to do with small mines, though some of the former may be described as the latter, but not all small mines are illegal.

How big is it? How long does it last? These are some basic questions that will help us to understand the way people conceptualize the world. My point is that scale is indeed important - especially when thinking of physical structures - but for mining with close social linkages, scale is not an adequate concept. It wrongly gives the impression that a large colliery is just a scaled up version of a small one. The scale concept is so widely used in mining that it is hard to break out of it. Instead of accepting it as a *fait accompli* we need to rethink the nomenclature. Popular language of scale classification usually tends to obscure the unity or diversity across scales. Instead of seeing it as a material part of nature, if we think of mining as an activity where humans interface with environment and development in complex and intertwining ways, then such categorization of mining into 'large scale' and 'small scale' may seem irrelevant. Later in this essay I shall discuss the size issue further while analyzing the informal nature of this type of mining.

## Resource as curse?

Some economists view resource as a 'curse' for mineral rich areas of poorer countries (Auty 1993). In the Indian context, with its traditional notion of destiny and fatalism, the thesis does seem a strange proposition coming from a developed country economist. Previously, Gelb (1988) had put forward the question asking whether oil windfalls are a 'blessing' or 'curse'. This group of economists was apparently trying to oppose the conventional geographical wisdom (see Ginsburg 1957, for example) that natural resource endowments play a most critical role in the low-income economies undergoing the development process. They summed up a large body of evidence suggesting that a favourable natural resource endowment may be less beneficial to countries at low and mid-income levels of development. The 'counter-intuitive' outcomes in mineral-rich poor countries/areas (Auty and Warhurst 1991) are the basis of the resource curse thesis. There are intractable questions involved such as the difficulty with dealing with mine closures in a mineral depend economy. The impact of mining on the integration of local communities has been uniformly detrimental (Labonne 1995), inducing wonder at what is described as ‘paradox of plenty’ by economists (Karl 1997). In tune with the resource curse concept, economists like Becker (1983) argued that Peru's mineral resources could replace agriculture as the original source of large-scale industrial capital. In this development model, the Peruvian state would be able to exploit its dependence on minerals by maximizing returns from the mining sector, then redirecting the surplus to foster industry in other sectors. Described as 'bonanza development', this has been the reasoning for state planners in numerous mineral-producing countries. But it has proved false repeatedly for reasons of the 'Dutch disease', a process by which new discoveries or favourable price changes in one sector of the economy - for example mineral resource extraction such as coal - cause distress in other sectors, for example in agriculture or manufacturing.

It has been noted that the Dutch disease is especially negative when combined with other barriers to long-term productive activity characterized by the exploitation of exhaustible resources (Hotelling 1931; Robinson 1989). Beginning with Adam Smith (1776; 1937; 399) economists have warned of the perils of mineral rents ('the income of men who love to reap where they never sowed').

In spite of the warnings of economists, mineral-rich developing countries operate as if there is no tomorrow. This attitude permeates from the highest to the lowest level, and local communities too, brought up on a given model of 'development' replicate what the state does to the resource, albeit in an informal form. The resource curse thesis takes the existence of natural resources as *the* curse and takes the development process as a 'given'.

### Coal: a physical thing

India is now the world's third largest coal producer. Within India, coal mining is a highly organized activity; it is institutionalized from beginning to end, with engineering colleges churning out mining experts and technical schools producing on-job specialists, government departments taking decisions on behalf of collieries, and public sector research institutes housing brilliant scientific research teams, and above all a tight bureaucratic control. There is no dearth of material on environmental impacts of mining (see Dhar 1990; Dhar and Thakur 1995 among others for a representative sample of research in these lines).

The state ownership of coal mining in India is important because it can put a significant amount of control over the volatile nature of mineral sector revenues and prevent booms and slumps from occurring at intervals. Such ownership can effectively modify the negative roles of Multi National Corporations (see early work by experts such as Girvan 1971; Evans 1975) Mines in developing countries tend to function as economic enclaves - transmitting a strong growth stimulus to distant metropolitan regions but having only modest local developmental impacts (Hirschman 1977). Rothermund and Wadhwa in their famous study (1978) noted this trait in Raniganj-Jharia coal bearing region and called Raniganj coalbelt a 'secondary enclave' to the primary one in Calcutta metropolis. The enclave nature has not really altered in the postcolonial period and has intensified during the last three decades under state ownership of the mining industry.

The appalling neglect of social development and well being in Indian mining regions sits uncomfortably next to a large body of legislation, including environmental legislation[7]. The commitment to environmental issues in the mining regions does not include the human element in what is constructed as 'the environment'. Thus the existing legislation suffers from narrow definitions, loopholes and a lack of direction to the agency responsible for implementing the laws. In the area of enforcement, the gap between intention and reality is even greater.

For all natural resources, their physicality as external resources that can be seen, traced on a map, touched and felt makes it easier for planners and development practitioners to define the situation as an objective one and prescribe technical solutions (Grove-White 1993). This is true of forests, and also of minerals such as coal in this case. A mineral resource obviously exists as a physical reality. This physicality of minerals leads to their scientific and quantitative construction. This physical image of the resource often introduces a certain construction of history and economy. It is common that the more natural the object appears, the less obvious the discursive construction is. This has happened in the case of mineral resources. Though minerals occur as natural phenomena, we must remember that they are also constructed by the political economic discourses that describe them.

## Sharing the Same Space

### Formal-informal coexistence

The honeycombed seam of Samdi is just the tip of the iceberg. Travel around the collieries, get off the main roads, talk to local villagers and keep your eyes open. You will get a feel for the enormous 'underground' activity that goes on in the area. Mr Haradhan Roy, the veteran leader of *Colliery Mazdoor Sabha India* (CMSI) says that about one million tons of coal is produced every year by these collieries in Raniganj alone. The total annual national production from such mining in India would not be less than 20 millions tons. In 2001 in Raniganj there were at least 33 identified sites of unauthorized mining. Some of these mines are open cast whereas others are underground. In addition, several legal mines even have an illegal counterpart. This is one aspect of the coexistence of both activities as in the case of Samdi Sangramgarh, which I have described before. There are also cases like Bansra where 44 local brick kilns purchase the illegal coal mined from the 7 ft upper layer, whereas the 18-20 ft thick lower layer is worked by ECL. The important fact is that besides individual mines on private land or on old abandoned mines or on working mines, pilferage of coal from working mines in the dark, or from the coal dump, is a common feature. The space sharing thus goes far beyond the obvious physical aspects. There are close economic linkages too; both activities are integrally related to each other as in case of other informal activities. There are

different types of coal mining in Raniganj, and because the informal mines are less visible or illegitimate does not necessarily mean that they do not serve an economic role. They represent the functioning of a single society originating within the same historical process.

Another type of illegal mining, for example, occurs not on the leasehold land of the ECL but on the land that is owned by individuals and has coal occurring close to the surface. For any quarrying - whether fire clay or morrum - an individual has to obtain permission from the government. There are a multiplicity of laws and acts small operators have to comply with, on the basis of their low levels of technology, capital investment and small size of operation. The temptation to circumspect the laws is immense.

## Whose resource is it anyway?

The formal and informal mines share their problems and often these are delicately interlinked. In Khaerbad colliery, for example, the two kinds of mining go on so close to each other that it is difficult to distinguish them. Leakage of oxygen into the underground coal seams has caused extensive mine fires in Khaerbad. Air over the entire area is thick with smoke and the ground is too hot to stand on with shoes for a significant length of time (at places the surface temperatures even at night may be higher than $65^0$ C, as per Gangopadhyay, Lahiri-Dutt and Saha 2001). The ground has cracked in many places to let out the piled up smoke. A nearby patch of *sal* trees - the entire Rashulpur jungle – is desiccated due to the subsurface fire. The fire has been raging here since the mid-1980s when ECL's use of a dozer to stop illegal mining sparked it off. Mine fires due to unauthorized mining nearby have also occurred in Itapara and Begunia collieries, and in the Shankarpur colliery of Bankola area. To keep the fire under control, the mine should run and thus Jambad, previously an underground colliery, has now been turned into an open cast mine.

Questions of safety and environmental protection seem academic in such a situation. The main goal for the nationalized coal industry was 'to ensure a scientific approach to exploration and exploitation of coal deposits with due attention to safety, conservation and environmental aspects, while accelerating the production level through substantial investment' (Kumarmangalam 1973). The hierarchical order of organizations/officials/institutions meant to ensure safety includes the Directorate General of Mines Safety to Coal India Limited's own safety department; ECL's Safety Officer; each Area's (ECL's own subdivision of the mining region clubbing a few collieries together for administration) safety office (that includes representatives of each recognized trade union); and the individual mine's safety officer. In this elaborate arrangement, the question of risk perception of villagers is never mentioned, and never once it is asked why people endanger their safety to an extent of going down into a mine without the basic precautions.

Naba Mishra, a *majdoor* leader of a leftist trade union feels that there are four main reasons for accidents in such collieries: roof fall either at the entrance that has to be rather small or at the work face or blasting related, sidewall fall; presence of toxic gas ($CO_2$ or carbon monoxide CO) and the lack of oxygen; fire due to breathing of oxygen; and inundation. In Mahabir colliery (a flooded mine abandoned by the ECL), local people cut coal in waist-deep water. In the abandoned mines in Kalipahari, the access to the coal seam has been cut from the side of the Damodar river. During the monsoons the raised water level prevents access to the seam, but work goes on throughout the dry season. On average, about 40-50 truckloads of coal are produced this way and much of it is purchased locally by the fuel coke traders. As a result, the illegal collieries have a rather short-life span - never over five years. The most common accident is caving in of the roof when the mine operations become deeper and bigger. The element of risk is thus more in bigger mines or older mines. Snakebites too are not uncommon.

The legal-illegal nexus is also evident in many ways. Take for example the fact that ECL still follows the conventional 'board and pillar' system of coal mining in most underground collieries. In this system of mining entire coal can never be lifted and there has to remain a significant amount of leftover coal. Added to this, neglect of proper sandstowing causes severe risks for the local built environment (Lahiri-Dutt 1999). Moreover, ECL leaves a mine as soon as a mine becomes

'uneconomic', thus leaving the remaining coal for local villagers to scavenge upon – a seriously risky job.

Surviving an accident is not fun; in case the accident attracts too much media attention then the risk is to be slumped with charges as heavy as murder or attempt to murder. As a result, when in December 1997 the illegal colliery of Pahargora caved in killing 11 people, no one came forward to claim the bodies of those dead. Even if no individual of the state-owned company may be directly pinpointed as aiding such mining, it is indirectly responsible through negligence of its property and lack of adequate assurance of security. The Pahargora mine was an abandoned open cast colliery where local people had driven inclines through the overhanging walls leading eventually to roof fall.

Illegal mining in abandoned collieries goes on in pits and open casts as well as inclines. There are innumerable abandoned collieries in the region. Breaking sealed underground mines is quite common in Raniganj, but what is significant is that the underground which should have been stowed is often found empty of sand. For example in New Kenda colliery in Jamuria, the presence of carbon monoxide in an abandoned underground colliery killed three members of a Santhal family in November, 2001. This happened close on the heel of the accident in Lalbandh, Barabani. In New Kenda, ECL had stopped mining operation some time ago, but had neglected to fill up the void properly with sand. This is not uncommon and often inspires local villagers to scavenge upon the leftovers of ECL. Of the total 33 illegal mining sites operating on a regular basis, a large number are located in Salanpur, Sripur, Satgram and Sodepur areas, but there are many instances of both activities going on simultaneously almost all over the region. Seven are outside ECL's leasehold land, and there the company has no responsibility to control them.

Though rare, there are outstanding cases of oversight by officials at the time of the nationalization process. Pahargora is a mine that strangely did not officially exist on the 'list' that was made of privately owned collieries to be brought under government ownership. Similarly, Saltora in the nearby Purulia district, was overlooked and omitted from the list and became non-existent in the eyes of the law. This too was a way of ensuring the illegitimatization of these mines. An irony indeed; with officials stealing a whole coal mine, not just a truckload of coal.

## 'The wretched of the earth'

The well-known CITU leader of the region, Mr Sunil BasuRoy, describes the workers of unintended collieries as 'the wretched of the earth' - those who have absolutely nowhere else to go and no other means of survival. Who are those scraping a living from these pits of unintended collieries? Thousands of people are involved in this economy; though newspapers would often refer to the significant role the '*mafia*' plays, these are mostly ordinary villagers, mostly poor, trying to get a livelihood base at any cost. There is a wide variety of people in the workforce: immigrants, poor locals; men, women and children; *adivasi*s and caste Hindus. The work is undoubtedly labour-intensive, and the use of machines remains unknown, though explosives are often used to cut through the coal. These informal mines have extremely poor working conditions resulting in a high incidence of disease and high mortality. There is a general lack of safety awareness - 'safety' is a word not often uttered where survival gets topmost priority. Dust and water-borne diseases are common among the labourers who often live in surrounding villages. There may also occur some diseases from environmental causes (high dust for example may lead to bronchial problems). The nature of the location and operation also leads to a high incidence of snakebites. Alcoholism is another major problem among the workers - the risks and uncertainties ingrained in the nature of the job are such that the non-permanency of life takes on an overwhelming role. Many of these local labourers are also inexperienced in handling cash, and can fall prey to local thugs. Low profit margins in these mines ensure that there is no regard for environmental regulations. The ILO (1999) has looked in detail into the labour situation of similar mines and has found the diverse nature of labour in other developing countries.

In Gourangdi village in Raniganj, about 5,000 people work in shifts in a large unauthorized open cast mining operation. During the monsoon season many of these mines are flooded and such mining activity usually comes to a halt. Most workers then move to work in the agricultural fields to

work as wage labour. The migrants from Bihar go back to plant rice and the Santhal *adivasi*s switch back to their traditional role as agricultural labour in local fields. Thus there is an inherent seasonality in the nature of the work that suits the rhythm of the local traditional agricultural economy.

There are significant gender differences in the assignment of work too. Women usually lift coal from old abandoned pits and quarries and also do some surface jobs, reflecting that the official wisdom of excluding women from underground mining jobs has penetrated the unintended collieries too. However, the family system of labour that prevailed in the region till the early decades of the twentieth century (Roy Chaudhuri 1996) has survived in these collieries. Men cut coal in the collieries, whereas women and children scavenge coal pieces from the overburden dumps. Women workers are usually concentrated in job areas where the risk is less apparent, such as carrying the coal in headloads of baskets, but harassment by the police makes such jobs risky in another way.

Wages are similarly unequal - Rupees 30-35 per work day for a woman going up to 70-80 for a man. However, there is no pattern or a fixed rate, and wages vary according to the specificity of the situation, time of the year or availability of labour. Work is usually not time-bound as in the formal sector and quantity or 'piece-rate' seems more prevalent. This means a worker must have a previously agreed upon size of production at the end of the working day. In certain mines there is a system of male labourers employing women under them to complete the piece rate job on a daily wage basis, while they earn on a daily basis.

A system of labour replacement called *badli* (exchange) has been in operation in the mining regions during the post-nationalization times. *Badli* means that a miner can draw his full salary but can also sublet his job to another person. This is because even in the formal mines, working conditions are so poor that a labourer develops numerous health complications within 10-12 years of work and is forced to either retire or employ a *badli* worker from his family or kin or community. Thus, not only more than one person shares a job, but also a significant amount of transfer of expertise takes place between the formal and the informal mines. These workers in their turn train another batch of workers, leading to a kind of local knowledge sharing about the techniques of mining. Retrenched or retired employees or old mining *sardar*s of the mining company may also come in handy to provide necessary consultations about the knowledge of seams and mining technology.

There is indeed a close formal-informal linkage in the coal-mining sector in eastern India. These unintended collieries provide jobs, where neither the formal collieries nor the local economies can generate an adequate number of jobs at present. The unintended collieries involve the lives, livelihoods and futures of a huge population in mining regions of developing countries. Their positive aspects need to be looked at, and instead of flatly illegitimizing these collieries, their collective strength now needs to be tapped.

## Collieries of Ordinary People

### What's in a name?

Names are important - they denote the inherent character of things. Names reveal the perspective, and at the same time say something about oneself. The kind of mining described in this essay is not exclusively found in India - it occurs elsewhere in mining areas too. Local people, we have seen, call such mining 'illegal', accepting the fact that the state rules are against them. The ILO has recognized that grinding poverty - 73 per cent of the population is below the poverty line in Niger, Africa, (Alfa 1999; 5-6) - 'has led to the development of small-scale economic activities, including small-scale mining, which is the largest activity despite low profits and high risks', to allow survival of people of local communities. In the same article (p 7) mining has again been subdivided into 'artisanal and semi-industrial'. The author goes on to say that 'artisanal mining and quarries appear to be liable to fewer taxes and duties than small-scale mining', thus differentiating them as two categories. Then in the next page (p 8) 'small-scale artisanal operations are used, but in a formal and

legal manner', suggesting the difference may be not in size but in the formal nature of the operations.

Martinez-Castillo (1999; 31) has in fact described such mining as 'traditional' and 'informal', and rooted the cause in 'the economic crisis, urban unemployment in the cities, poverty in the agricultural areas and the violence that prevailed in the 1980s gave rise to a growing social phenomena - individual, family or collective migration to zones other than the place of origin, searching for safety and economic survival'. Such informal mining generated up to 64 per cent of Peru's gold production in 1991-'97. In official texts, however, such mines become 'encroachers' drawing attention to the diverse representations of 'miners', 'mines' and 'illegal mines'. The informal mining sector constitutes a very different class and section than ordinary mining. Informal mines like the ones described here require thinking about the political economy of development in which economic 'fixes' (see Mitchell 1998) such as mining development dominate the discourse.

The ILO distinguished the informal sector from the formal by defining the former as being characterized by ease of entry, reliance on indigenous resources, family ownership, labour intensiveness and adapted technology, skills acquired outside the formal school system and unregulated market (ILO 1972). Apparently, this is the most widely accepted definition of the informal sector. In the case of mining too, the ILO tends to divide large and small according to scale. There is no virtue in smallness and no point in propping up firms simply because they are small. India has a long tradition of policy of encouraging small scale economic activities (Holmstrom 1997). There is at the same time an incentive for not growing beyond a certain level of investment or employment. Division of 'small' and 'big' mining ignores how ordinary people struggle over generations in myriad ways to survive and to prosper in a relentlessly hostile environment. Unintended collieries are neither big nor small: they have hybrid characteristics earned from their struggle to survive.

Labonne and Gilman (1999) have also touched the issue - they described artisanal mining as less mechanized, more labour intensive, and less socially and environmentally devastating. Artisanal mining has been characterized mainly by the absence or low degree of mechanization, low safety standards, poorly trained personnel, large influx of migrant workers, low pay scale, low productivity, chronic lack of capital, illegality due to mining without concession rights, little consideration of environmental impact and unknown mineral reserves. What was not mentioned is that these mines have specific and inherent value especially for the poor since they allow them to develop within their own capacities and potentialities, and to meet the demands of reduced access to resources. They are mines constituting what Papola (1981) described as the unorganized and informal sector but in a mineral region. As in other sectors of the economy, the two sectors coexist and persist, and support each other to thrive. These mines are best understood as a specific mode of production organization, instead of considering first their size, technology, productivity and labour markets.

Recent years have seen a widespread emergence in the belief that economic growth based on large-scale and highly formalized economic structure is not the only, and not necessarily the most desirable, way of development. In the area of mineral resource exploitation, there now needs to be a fuller understanding of the role of the community in local economies, and they need to be involved in the development of future plans (Filer 2000, has succinctly described how in the Lihir mines of Papua New Guinea this proved to be an uphill task).

## Mining and access to livelihood resources

The case of informal mining opens up a very important public debate - one that is of far more significance than what might appear to be the case at first sight. In collective terms the debate implicitly involves the lives, livelihoods, and futures of a significant population straddling the mining areas of all developing countries. This is not only a large population, but is also those among the poorest and most exploited sections in these regions and countries (Fernandes 1992). The agenda is much bigger than just nomenclature or regulation and control, but involves the common pool resources that help poor communities survive in rural economies. Informal mining and miners are a powerful symbol and reminder of a feudal past (and of a continuing presence that exists too

widely in India and other less developed countries). It is vital that the issue is understood not just by itself but as a part of the wider and continuing struggle to fight injustice. It is important that the debate that has been initiated is sustained and taken up as widely as possible by academics, planners, international agencies and the civil society, and that a socially just and forward-looking resolution is found. It is important that apparently 'modern' but equally authoritarian, restrictive 'planning' is not imposed to 'control' the 'problem'.

There is a need to accept local and indigenous communities as equal and integral citizens; to acknowledge their rights over local natural resources; to develop the society also according to their needs as different from the dominant mining-urban-industrial economic form, and to find ways of decision-making in which they can take equal part (Mendelsohn and Baxi 1994). In India, especially in mining regions, they are somehow tolerated, and planning is done *for* them, according to what the dominant groups think is best. Usually, it is quite the opposite, where 'planning' means what the dominant centre thinks is best for itself, and where such peoples are not only exploited for their labour but their lifestyles are also frowned upon and their livelihoods are declared 'illegal' - and then even this 'illegality' is exploited. Access to land, natural resources and food security are at the centre of motives for unauthorized coal mining. In Raniganj, nearly 50 per cent of rural households are either landless or semi-landless (that is having a landholder of less than 0.2 ha), and landlessness has increased over time, especially in such areas of modern economic development such as mines. The decline of common pool resources such as forests and grazing land in a mining region is directly responsible for unauthorized mining.

## Let Us See Why

### Three reasons

Three main factors were identified in the course of this research as responsible for unauthorized mining being rampant in poor mining regions. These are the attitudes to resources; the operational/technical lacunae, and the mining-induced environmental decay leading to fewer alternative occupations including destruction of subsistence livelihoods. These factors are often responsible for of immigration into the mining regions from surrounding regions, and rising levels of urbanization.

In Raniganj region, the worldview of the *jungle mahal* communities partially changed as migrants poured in, and the modern conception of economic development began to take firm root. Development began to take only one form; mines were equated with being 'necessary' and 'good' and the way to prosperity. Mines often descended on the region with their different economic linkages and in the process nullified other linkages that have been nourished over years by local communities. Local communities had little or no involvement in the mine's operation except that, for every two hectares of land leased by the company, one job was offered besides cash compensation. Those who worked on that land received nothing and became scavengers overnight. Those families who had more land but fewer people, began to 'sell' jobs as land transfers tightened just before the opening of a mine. The local community is complex and stratified in many ways (by class of course but also by castes) and has a well-entrenched system of local political representation in the form of *panchayat*s. The mining company treated the local space as if it belonged to no one and became theirs for the first time, and was there to be measured, planned, cut, stripped or even afforested if the whim arose. It was done by a state-owned company, the state having the ownership of all natural resources falling within its boundaries and having the duty to 'protect' the land and people (from risks, uncertainties and insecurities). The snatch and grab worldview of the state thus permeated to the local level, even to the individuals who began to see the coal as a 'resource' for the economic betterment and that had to be owned at any cost, legally or illegally. By the process, the physical resource of coal earned a symbolic meaning, it became the only element of nature that had value, even to local communities. Not the land, not anymore. Not the rivers. Not the trees. This was the attitude of 'company' owners, the private entrepreneurs who mined the coal before the state took over. When the state became the owner, the attitude did not change. In addition, policing became slack and inefficient, triggering a surge in unauthorized mining. In my interviews with the local mine operators, it became apparent that the mood is becoming defiant,

they do not feel that the job is wrong or unlawful, and they feel they were doing a great service by providing jobs to local unemployed. This in my view is one way of reestablishing the lost claims over the land and its resources. When the local communities found themselves disempowered by the laws or the mining company, they began to extract as much as they could from the land they could no longer call their own.

The operational or technical aspects are easier to see and more tangible than the subtle attitudinal aspect. Several steps can easily be implemented - proper sealing of the entry points of abandoned mines and proper sand stowing will have to be ensured if risks to life and property are to be avoided. The current practice is to leave the part of sand stowing only in account books and reports, causing the breakage of the seals of old abandoned underground mines. Similarly, a conjunctive use of both mechanical-manual technologies can be used with a little bit of imagination and goodwill. For example in the case of Samdi, the upper 8 ft layer can be mined manually by ECL whereas machines can mine the lower 20 ft. Also, most of the coal needs to be removed in this conjunctive way from individual mines so that not much is left to scavenge upon. Above all, there should be a set of best practice guidelines in place that need to be enforced with active participation by the local community.

Finally, environmental decay has accompanied the near-closure of the agricultural sector of the economy of this mining region, especially in the last three decades of nationalized coal mining expansion. The displacement of peasantry, not only physically as in cases of resettlement but economically from traditional occupations of subsistence agriculture, has resulted in large scale unemployment, which erodes the livelihoods of poorer rural groups. The economy of the region is in a flux - from traditional agricultural base the working class and castes are gradually moving towards non-agricultural activities especially mining. The transition in the economy may have some social and cultural manifestations, and unauthorized mining is possibly related to those changes too. This decay had set in early (Paterson 1910), but the displacement of peasantry has been extremely rapid in the last three decades of public sector investment by the state. Between 1971 and 2001, both agricultural land and the representation of peasantry in the workforce of the region has steadily declined even in the non-colliery villages (Ghosh 1996). A pauperization process of the *adivasis* and original inhabitants has taken place in which the traditional land rights have been lost and no new benefits have accrued. Thus traditional lifestyles have been disrupted and ordinary people have turned into scavengers and criminals (Bengara 1996).

## A new moral economy?

In 1993 E. P. Thompson proposed the term 'moral economy' (Thompson 1993; 188) to refer to notions of legitimate and illegitimate (economic) practices, 'grounded upon a consistent traditional view of social norms and obligations, of the proper economic functions of several parties within the community'. In the Raniganj collieries, local communities find themselves isolated and excluded from the formal economy and have tried to reassert their claims to land by means that are viewed as illegitimate by the state agencies. Poor peasants and others draw upon their traditional rights and customs when faced with attempts by large mining companies to impose new, more contractual and market-based notions of rights and obligations. Scott (1987) in his famous *Weapons of the weak* showed this sort of retaliation by poor, weaker and subordinate peasant groups to the more powerful, who often fail to recognize this as a kind of revolt. In Raniganj, instead of seeing the ‘resource’ as a ‘curse’, if one looks at the ways the economic development process has bypassed local, poorer groups, then an explanation of mushrooming unauthorized mines can be found. The dominant groups of society expend effort and material in moulding the mineral economies to suit their own ends at the expense of the subordinate groups, who oppose this form of development with whatever means are available. The hegemony of the mining economy cannot avoid being the subject of conflict, and resistance is rooted in everyday material goals (not necessarily so called 'trade unionism') rather than in a 'revolutionary consciousness'. Seen from the opposite perspective, it is the mining company and associated formal economic forms that are breaking the traditional mores of local communities. The mining companies rationalize their exploitation and refusal to abide by the traditional dictates of community feeling and mutual help by denying the morality of

the poor; they do not attack the shared norms of the village directly. The poor try to cling to a disappearing way of life where they had ownership over the local resources.

The unintended collieries are a form of resistance on the part of local communities to the mining economy. The resistance has to be covert in nature as the poor communities are compelled by their need to make a living. In mainstream literature four criteria are usually cited as 'genuine' resistance: it must be collective and organized rather than private and unorganized; it must be principled and selfless rather than opportunistic and selfish; it must have revolutionary consequences; and it must negate rather than accept the basis of domination. None of these requirements make sense when one looks at the unintended collieries of India.

Jeffrey and Sundar (1999) called for a new moral economy for India's forests. Let us now extend that call to mining regions too. The moral economy of the subordinate groups in the case of mining must now be established, instead of seeing the resource as *the* curse. The unintended collieries are the grounds of contestations between the more powerful, formal, market-oriented, global economic forms, and the subordinated, informal, tradition-oriented peasant economic forms, and the time has now come to recognize the moral legitimacy of the claims of local people to access the resources of the land.

Especially recent decades of mechanization and more capitalization have triggered the rise of the local communities. The time has now come for Indian mining to understand the society in which the resource is situated, and recognize the community's rights over local natural resources. We need much more than a token recognition of local rights, and it is up to the good intention of the mining industry leaders, international mining institutions and respective bureaucracies to act now.

## Throwing questions

I hope to have opened a new debate on 'illegal' mining and this is just the beginning. I cannot end this essay with a definitive conclusion. Instead, I will try to list the number of challenges that arise once we take a closer look at these informal, unauthorized, unintended collieries. These involve questions about who participates in mineral resources management and on what basis, and who benefits and who loses out. Several questions demand clear answers at this point:

- How has the 'resource' been problematized in mining, locally, regionally and globally by various actors? What kinds of 'community' are presupposed in this discourse?
- What may be behind the economic development discourse in a mining region, and how is it constructed by the state and other actors?
- What is the impact of the new discourse on the local ecology and the local economy, and on the way resources are defined and administered?
- Why haven’t local communities been as inspired to participate at every phase of mineral resource exploitation as has occurred in some other sectors of natural resource management?

Answering these questions would go a long way in understanding the unintended collieries.

## Notes

1. This paper had incurred many 'curses' that wiped it out from the computer during my transoceanic trips, but then gone through several 'reincarnations' as well. It had to be completely rewritten from the notes at least twice. In the meanwhile, the unauthorized mining 'problem' has assumed even greater proportions and has spread out to many other coal-bearing regions of India (and I understand, elsewhere in the third world). Excepting the formation of committees and some more sensational newspaper reports little has been done at the government level. Ignorance and avoidance of discussion seems to be the norm than exception in what is essentially a socio-political and governance issue of the mineral resources.

2. Actually coal mining did not pick up till the mid-nineteenth century as long as it was not recognized that instead of importing British coal, it is best to use local coal to run the railways, steamships, jute mills, arms factory and the urban industries in the backyard of Calcutta.

3. Consider this. In its letter no. 9627-P dated 20.9.93 the Superintendent of Police of Burdwan district wrote to the Chief Managing Director of ECL: 'The response of the ECL authority in mentioning that the responsibility and authority in curbing down antisocial activity rests with the district administration and state police being true but the ECL authority should also not avoid its responsibility of guarding its property lying abandoned in open especially when ECL is provided with over 1,000 armed Central Industrial Security Force personnel and over 5,500 security personnel. Nearly 1,700 guns/revolvers are available with the security staff also.' Note the accurate numbers mentioned but the overall reluctance to share the responsibility of tackling the problem.

4. A subsidiary of Coal India Limited set up in 1975 to advise on the development of mining technology and conduct research into the needs of the Indian coal industry

5. The coal mining industry was nationalized in several phases - the first phase beginning with the coking coal mines in 1971-'72 and then with the non-coking coal mines in 1973. In October 1971, the Coking Coal Mines (Emergency Provisions) Act 1971 provided for taking over 'in public interest' of the management of coking coal mines and the coke oven plants pending nationalization. This was followed by the Coking Coal Mines (Nationalization) Act 1972 under which the coking coal mines and the coke oven plants other than those with the Tata Iron and Steel Company Limited and Indian Iron and Steel Company Limited, were nationalized on 1. 5. 1972 and brought under the Bharat Coking Coal Limited (BCCL), a new central government undertaking. Another enactment, namely the Coal Mines (Taking Over of Management) Act, 1973 extended the right of the government of India to take over the management of the coking and non-coking coal mines in seven states including the coking coal mines taken over in 1971. This was followed by the nationalization of all these mines on 1. 5. 1973 with the enactment of the Coal Mines (Nationalization) Act, 1973 which now is the piece of legislation determining the eligibility of coal mining in India (http://www.coal.nic.in/vscoal/abtcoal/ htm).

6. These are inventions of CIL apparently to follow the number of guidelines laid by the Government of India, Ministry of Environment and Forests (MOEF). EMPs are prepared and applications for forestry clearance made for coal projects for approval of the MoEF. For example, a Consultative Committee Meeting of the Ministry of Coal on 'Environmental aspects of coal mining' in 1992 had predicted that by the year 1999-2000 the bulk of coal in India will come from open cast mines. For this, overall perspective plans in relation to environmental degradation due to mining activities for the major coalfields in the country and the measures to be taken to mitigate the adverse effects as well as steps that are required to ensure that coal is exploited in an environmentally compatible manner. Advance EMP for 10 major coalfields have been prepared and submitted to the MoEF. These are primarily Environmental Master Plans meant for progressive implementation and to act as a guide for better implementation of EMP of individual projects (GOI 1992).

7. According to a Handbook on coal published by the Burdwan district administration, there are as many as 16 laws covering the entire gamut of mining activities. Important environment related

legislation relevant to mining are: The Water (Prevention and Control of Pollution) Act, 1974; The Air (Prevention and Control of Pollution) Act 1981; The Forest (Conservation) Act, 1981; The Mines Act, Coal Mines Regulation and Circulars issued by the Director General of Mines Safety; The Environment (Protection) Act, 1986; Mines and Mineral Regulation and Development Act amended in 1988 making it obligatory on the part of mine operators to take environmental safeguards including reclamation of mined land.

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## References


Alfa, S., 1999. Child labour in small-scale mines in Niger.' In N. Jennings (ed.) *Child labour in small scale mining: Examples from Niger, Peru and Philippines*. Geneva: Sectoral Activities Programme, International Labour Office (Working Paper).

Auty, R. M,. 1993. *Sustaining development in mineral economies: The Resource curse thesis*. London: Routledge.

Auty, R. M. and A. Warhurst, 1991. *Sustainable development in mineral-driven economies,* Working Paper, Economics Department, Lancaster University, UK.

Becker, G. D., 1983. *The new bourgeoisie and the limits of dependency: Mining, class and power in revolutionary Peru*. Princeton: Princeton University Press, N.J.

Bengara, R., 1996. Coal mining displacement. *Economic and Political Weekly*, Vol. XXXI, Number II, pp. 647-649.

Dhar, B. B. and D. N. Thakur, 1995. *Mining environment*. New Delhi: Oxford University Press.

Dhar, B. B., (ed) 1990 *Environmental management of mining operations*. Delhi: Oxford University Press.

Evans, P., 1975. *Dependent development: The alliance of multinational, State and local capital in Brazil*. Princeton: Princeton University Press, N.J.

Fernandes, W., 1992. Power and powerlessness: Development projects and displacement of tribals. *Social Action* (July-September), pp. 246.

Filer, C., 2000. *How can western conservationists talk to Melanesian landowners about indigenous knowledge?* Canberra: Australian National University, Research School of Pacific and Asian Studies (RMAP Working Paper No. 27).

Gangopadhyaya, P., K. Lahiri-Dutt and K. Saha, 2001. Temperature anomalies over the coalseams and surface coalfires in the Raniganj coalbelt, India, *International Journal of Remote Sensing, Accepted*.

Gelb, A.H., 1988. *Oil windfalls: blessing or curse?* New York: Oxford University Press.

Ghosh, I., 1996. Changing land ownership situation and the displacement of peasantry in the Raniganj coalbelt, West Bengal. *Journal of Indian Geographical Foundation*, Calcutta, Vol. 2, No. 2, pp. 145-168.

Ginsburg, N.S., 1957. Natural resources and economic development. *Annals of the Association of American Geographers* Vol. 47, pp. 197-212.

Girvan, N., 1971. *Foreign capital and economic underdevelopment in Jamaica*. Kingston: Institute of Social and Economic Research, University of the West Indies.

Government of India (GOI), 1992. *Consultative Committee Meeting of Ministry of Coal on Environmental Aspects of Coal Mining*. New Delhi: Ministry of Coal.

Grove-White, R., 1993. Environmentalism: A new moral discourse for technological society. In K. Milton (ed) *Environmentalism: The view from Anthropology*. London: Routledge.

Hirschman, A.O., 1977. A generalized linkage approach to development, with special reference to staples. In M. Nash (ed) *Essays on Economic Development and Cultural Change in Honor of Bert F. Hoselitz*. Chicago: University of Chicago Press, pp. 67-98.

Holmstrom, M., 1997. A cure for smallness? Networks, trust and shared services in Bangalore. *Economic and Political Weekly*, Vol. XXXII, No. 35, pp. L11-19.

Hotelling, H., 1931. The Economics of Exhaustible Resources. *Journal of Political Economy,* Vol. 39, April, pp 178-198.

International Labour Office, 1999. *Social and labour issues in small scale mines: Report for Discussion at the Tripartite Meeting on Social and Labour Issues in Small Scale Mines.* Geneva: International Labour Office.

------(1992) *Employment, incomes and equality: A strategy for increasing production.* Geneva: International Labour Office.

-------(1972) *The urban informal sector in Asia: An annotated bibliography*. Geneva: International Labour Office.

Jeffery, R. and N. Sundar, (eds.) 1999. *A new moral economy for India's forests: Discourses of community and participation,* Sage Publications, India, New Delhi.

Jennings, N., 1995. *Mining and minerals: A labour and social perspective*. Keynote Paper. Conference on Mining and mineral resource policy issues in Asia-Pacific: Prospects for the 21st century, 1-3 November. Canberra: The Australian National University, Research School of Pacific and Asian Studies.

Jennings, N., (ed.) 1999. *Child labour in small scale mining: Examples from Niger, Peru and Philippines*. Geneva: Sectoral Activities Programme, International Labour Office (Working paper).

Karl, T. L., 1997. *The paradox of plenty: Oil booms and petro-states*. Berkeley, California: University of California Press.

Kumarmangalam, S. M., 1973. *Coal industry in India: Nationalisation and tasks ahead*. New Delhi: Oxford and IBH Publishing Co.

Labonne, B., 1995. *Community and mineral resources: From adversarial confrontation to social development through participation, accountability and sustainability*. Keynote Paper. Conference on mining and mineral resource policy issues in Asia-Pacific: Prospects for the 21st century, 1-3 November. Canberra: The Australian National University, Research School of Pacific and Asian Studies.

Labonne, B. and J. Gilman, 1999. *Towards building sustainable livelihoods in the artisanal mining communities*. Paper presented in the tripartite meeting on social and labour issues in small scale mines. 17-21 May. Geneva: International Labour Office.

Lahiri-Dutt, K., 2001. *Mining and urbanization in the Raniganj coalbelt*. Calcutta: The World Press.

Lahiri-Dutt, K., 1999. State and the market: Crisis in Raniganj coalbelt. *Economic and Political Weekly,* Vol. XXXIV, No. 41, pp. 2952-2956.

Martinez-Castilla, Z. (1999) 'Child labour in traditional mining, Mollehuaca, Peru' in Norman Jennings (ed) *Child labour in Small-Scale Mining: Examples from Niger, Peru, and the Philippines*, International Labour Office, Geneva.

Mendelsohn, O. and U. Baxi, 1994. *The rights of subordinated peoples*. Delhi: Oxford University Press.

Mitchell, T., 1998. Fixing the economy. *Cultural Studies* Vol. 12, No. 1, Routledge, pp. 83-112.

Nankani, G., 1979. *Development problems of mineral exporting countries*. Washington, D.C.: World Bank Staff Working Paper No. 354.

NISM (The National Institute of Small Mines), 1993. News Bulletin No. 11 and 12, October 1993 and January 1994. Calcutta: The National Institute of Small Mines.

Papola, T.S., 1981. *Urban informal sector in a developing economy*. Delhi: Vikas Publishing House.

Paterson, J. C. K., 1910. *Bengal district gazetteers: Burdwan*. Calcutta: Bengal Secretariat Press.

Robinson, T.J.C., 1989. *Economic theories of exhaustible resources*. London: Routledge.

Rothermund, D. and D.C. Wadhwa, (eds) 1978. *Zamindars, mines and peasants*. New Delhi: Manohar Publications, (reprint).

Roy Chaudhury, R. 1996. *Gender and Labour in India: The Kamins of Eastern Indian Coalmines, 1900-1940*. Calcutta: Minerva.

Scott, J. C., 1987. *Weapons of the weak: Everyday forms of peasant resistance*. New Haven and London: Yale University Press.

Smith, A., 1937. *An inquiry into the nature and causes of the wealth of nations*. New York: Modern Library.

Thompson, E. P., 1993. *Customs in common: Studies in traditional popular culture*. New York: The New Press.

Vicziany, M., 1998. Ecological perspectives on the development of the Piparwar coal mine in Bihar, 1954-1994. In R. H. Grove, V. Damodaran and S. Sangwan, (eds.) *Nature and the orient: The environmental history of South and Southeast Asia*. Oxford University Press, New Delhi, pp. 484-533.