

Viggo Brun. 2013. *Fired Earth: Bricks, Kilns and Workers in Kathmandu Valley*. Kathmandu: Himal Books.

When visiting Paris (and some Mediterranean capitals), Nepalis are generally impressed by the distinctive stone architecture of ancient monuments and houses. There is indeed a marked difference with the Kathmandu valley, where for nearly two millennia the traditional building material has been fired or sun-dried bricks. In this valley, few monuments are made of stone, even though some exist. Let us not forget that the Nepali Rana palaces and mansions in the nineteenth and twentieth century were made of brick that was then covered in plaster and stucco. There is a striking contrast in this respect with the local cream-grey limestone of Paris. What visitors often ignore is that the materials used for buildings in the French capital were extracted from below the city itself and from the surrounding region (south of the Oise *département*). The Paris underground is riddled with limestone quarries, especially below the left bank of the river Seine. These quarries were in operation during the Middle Ages and up until the eighteenth century. Despite growing demand at the beginning of the eighteenth century, they were closed after several sinkholes appeared and the subsequent collapse of streets and buildings. In the course of the nineteenth century some caves were used to ferment barley and to produce beer. Like Newar cities and villages in Nepal, the buildings in the French capital are therefore the expression of its local underground resources. This intimate link is a feature of vernacular rural and urban architecture throughout the world. Paris is built on a calcareous geological formation, whereas the cities and villages of the Kathmandu valley are built almost entirely on clay soil.

Viggo Brun's lavishly illustrated book, published by Himal Books, prompts us to revisit and reflect on the close relationship between the types of building and their immediate environment. This work presents meticulous, first-hand documentation on brick-making in the Kathmandu valley. The author provides a wealth of details about the technical process of making bricks, from the traditional field clamp and walled clamp used for local production (often limited to one house) to the more recent industrial fixed-chimney BTK (bull's trench kiln) introduced in the 1980s, while mentioning in passing the highly polluting movable-chimney BTK which was abandoned in the early 2000s because of the environmental damage it caused. There are at present 113 kilns in the Kathmandu valley, which are located in former rural zones.

BTKs, which had been in existence in neighboring India for a hundred years before they were introduced into this valley, can produce far more bricks and at a much faster rate than the old clamps. Their production capacity is about 27 times greater. Unlike intermittent clamps, they can fire bricks continuously.

Two other types of modern brick kiln operate at present in the region. The first type is forced-draught kiln, known as the Habla kiln, from the name of its German inventor. It is the most fuel-efficient machine that makes the best use of heat and is the cheapest to build. Its kiln is square rather than oval, and requires a constant supply of electricity and therefore needs a backup generator in case of a power outage. The first one of its type was built in 2003 in Chapagaon. The second type is called Hoffman kiln, which is the most mechanized and produces bricks of high quality; it has been used to build prominent buildings such as Tribhuvan International Airport. Due to climatic constraints and to the rice cultivation calendar, production from all these kinds of kiln, whether traditional clamp or more advanced ones, is seasonal. It lasts from the beginning of December to the end of May; that is during the cold dry season. In 2011, there were only two walled clamps still in existence in the valley. The others have been replaced by more modern kilns.

Whatever the case, the production process is the same: “First, soil is softened into a smooth, clayey mass. Then, it is molded into bricks, which are laid out in the open air to dry. Next, the dried ‘green’ (unfired) bricks are transported to the kiln, staked systematically, and fired. In the final step, the red, fired bricks are removed from the kiln, and stored for later distribution” (p. 3). Almost all brick kilns are located on a *kalimati* geological formation; very fertile, dark grey, silty clay, which was regularly used in former times to enrich agricultural soil during rice cultivation. Wood was formerly used to fire the bricks. Today it has been replaced by coal, mainly from Assam.

Brick production is a highly fragmented process. It is made up of different steps that are undertaken by separate teams or groups of persons. First the clay has to be prepared: using a mattock, the hard soil is hacked into small enough clumps for it to crumble easily, and then arranged into a heap. This heap is soaked in water, and kneaded with bare feet. The earth is then moulded into bricks, left to dry in the sun, stacked, and carried from the brick-fields to the kiln. Nepali porters carry their load of bricks in the local way, on their backs, hanging from a tumpline that is wrapped around the forehead, whereas Indians carry bricks on the top of their heads. In the kiln itself, work is divided among setters (setting batches of bricks), dust-men, coal-men, firing-

men, roof-openers, red-brick porters (to load the trucks), to mention only the main operations. All these technical phases are repetitive and monotonous. The different categories of workers live separately, each in their own quarters. Each group has a leader, *nāike*, who, by acting as an intermediary, recruits laborers.

The main value of Brun's book lies in the many interviews the author conducted with a number of workers, contractors and entrepreneurs from this economic sector, and the description of the various manufacturing processes. The persons interviewed provide invaluable data about the internal social organization in this sector of work and the geographical origins of the labourers. On average, BTKs employ 300 persons in factories (as well as 20 animals, horses or donkeys – mostly from Nepalgunj – for transportation), but some kilns are said to be operated by double this number of people (p. 5). Except for owners and office-workers, almost all kiln workers are seasonal migrants. Brick-moulders are often poor farmers from neighboring districts such as Kabhre and Sindhuli. Those who carry green bricks from the fields are often young people from the hills, while all those who work inside the kilns (coal-men, firing-men, dust-men) are recruited from Bihar in India (p. 5). Middlemen and contractors hire this workforce well in advance. Most workers belong to marginalized ethnic groups or castes from India or Nepal. The hardest and most tiresome tasks (which are sometimes done at night) are carried out by Indians. By and large, work in brick kilns is not looked upon favorably; it is regarded as low-level labor.

Living conditions are rudimentary, to say the least. Workers live in small dwellings made of brick walls and covered with a corrugated iron roof. Each hut houses four or five people. Drinking water and sanitation facilities are very limited or non-existent. Workers inhale dust and smoke all day long and are exposed to highly polluted air. They suffer from respiratory problems, eye infections and skin rashes. In December–January, as soon as the sun sets, the temperature falls to about 5–10°C. It is therefore bitterly cold in the small huts and many children working in the factories suffer from a permanent cold.

In fact, child-labor is one characteristic of the kiln workforce. A number of children under the age of 16 work in kilns and several are even younger than 14, the legal working age in Nepal (p. 6). Children mold and carry bricks in and out of the kilns, and then drive the herd of donkeys. Child brick-molders usually come with their parents and work with them as part of a team. Child

employment has had negative consequences in matters of education. Despite attempts to set up temporary schools, almost none of migrant workers' children benefit from any schooling while they live at a kiln.

According to the employees, such harsh conditions do not differ much from others sectors of the economy (p. 6). With regards the salary, most persons interviewed asserted that they were well paid and that they could make good money, especially if several family members worked together in the kilns. Children are paid the same rate as adults. If workers avoid falling into the trap of asking the contractor for an advance on the following year, and consequently of becoming perpetually indebted, the money a family can make from this seasonal work is said to be a substantial amount. Yet a worker's individual salary is very low: NRs. 5,000 per month, plus a bonus for the persons in charge of the firing process. This type of worker is normally able to take home about NRs. 20,000 at the end of the brick season, which is not a lot. As one employee points out (p. 83), Indians like coming to Nepal instead of taking a job in India, because the wages for working in kilns are paid at the end of the season, therefore enabling them to save more money. By and large, laborers are used to working in similar difficult conditions with comparable wages in other sectors of the economy. They have little therefore to complain about.

The author remains very factual in his undertaking. He does not try to elaborate on these essential basic data. Moreover, not all the necessary information is provided to fully assess the economic activity from a comparative viewpoint. The length of the working day, for instance, is given for some categories (12 hours a day for men in charge of the firing process! p. 53), but not for them all. Yet, this airing of local opinion enables more general issues to be addressed, in particular the passage from domestic or pre-modern workshops to factories, which is indeed a major phenomenon in changing traditional societies. Such a detailed study of the world of brick production, just like others about different economic sectors such as the carpet industry (which employs its workers all year round) or the road industry, paves the way for a better and broader understanding of the rise of the industrial sector and capitalistic enterprises in Nepal, and its consequences on social relations in the workplace.

Traditionally, kilns in the valley were operated according to a domestic or semi-domestic pattern – more often than not by an enlarged family along with some friends all of whom worked on a reciprocal work basis, *bolā jyā* in

Nepal Bhasa or Newari (personal data). In such cases, house-builders were their own brick-makers. Such was the case at least in Jyapu agriculturist villages. In other situations, people called upon the services of certain Newar castes, such as Awale masons and Prajapati potters (who also used to live in towns) specialized in baking clay objects. Thus, there was a partial division of work, especially for city-dwellers who were not involved in agricultural work, in accordance with the caste system and its distribution of ritual work and duties. Seen from this perspective, the appearance of modern kilns that produce a large number of manufactured bricks has led to a major, drastic transformation in production techniques and in the associated social relations.

Here we face a shift from traditional, pre-modern society to an industrial social organization based on capitalist methods, principles and practices. These processes run parallel to those that emerged in eighteenth century Europe and North America, with substantial differences here and there; a transformation that captured the curiosity of nineteenth century thinkers, not only Marxist but also liberal philosophers. In western countries, the growing division of labor and the mechanization of production led to freeing social relations among workers of old religious and social customs. Such a change induces an increase in the population's mobility and the shaping of a new proletariat. Interestingly, as at Nepali brick kilns, the earliest factories in eighteenth century Europe provided on-site housing for workers.

In the case under review, however, the transformation is still incomplete. Contrary to eighteenth century British factories that flourished in Manchester and elsewhere, the Nepali brick industry has so far been a seasonal activity and operates alongside agricultural activities during the rainy season. Laborers sometimes even work as craftsmen in the carpentry and masonry sectors for the other months of the year. Similarly, the prevailing role of caste or ethnic divisions among the working class is worth noting. Even if they are subjected to more or less the same living conditions, laborers gather together at their work place according to their caste or ethnic group, and do not mix unnecessarily (p. 88). Even as far as people from the plains are concerned, Yadavs live together in one hut, Rams in another, Sadais in yet another, and so on. At one kiln, Bihari Muslims live in their own hut, well away from Hindus (p. 88). Traditional rules forbid inter-caste commensality. These exclusive patterns, typical of Indo-Nepali culture, have resisted the standardization of working conditions as well as the industrialization process.

Besides, labor is still only partially mechanized, save at the most modern Habla kilns. Most of the work is still done by hand, using rudimentary tools that sometimes belong to the workers themselves (mattocks, for instance). Bricks are molded by hand one by one using wooden molds. Altogether, the number of machines is very small. Yet, according to Marxist views, such socio-economic changes, whether partial or total, not only engender an increase in labor productivity, but also a greater, deeper rooted exploitation of the masses and a phenomenon whereby labor is increasingly dominated by capital. Indeed, the worsening of working conditions and the exploitation of low-skilled laborers must be borne in mind when discussing the merit of liberalism and liberal economics in a country like Nepal. Trade unions, for their part, do not appear to play a significant role in the sector concerned. They are feared by entrepreneurs and thus avoided. However, their influence (especially those affiliated to the Communist Party of Nepal [Unified Marxist-Leninist]) is growing as far as some issues are concerned, for instance child-labor and illiteracy.

The exponential increase in housing in the Kathmandu valley and the growth of its urban center have therefore induced a major transformation in the social mode of production and a *proletarianization* of labor forces. According to my calculations based on Brun's data, the number of persons employed in the Kathmandu valley's brick industry has reached at least 35,000. These workers often switch from one factory to another depending on the contractors they happen to meet. The large majority of them would like to settle in the Kathmandu valley for good (p. 88). Even if the sector has retained some traditional economic features, the development of kilns has entailed a surge in capitalistic economic enterprises. In other words, the current transformation of the Kathmandu valley into a vast, highly populated, urbanized zone is accompanied by the emergence of a class society that is organized in a different way from traditional caste society.

The future of the brick production in the region studied looks very uncertain. At present, this industry is facing a rapid depletion of suitable soil to run its factories and to produce bricks. Many kilns are running out of good soil and are increasingly in need of transporting suitable earth from elsewhere. In addition, Brun's book highlights the persisting negative impact of kilns with regards pollution. Smoke-belching brick factories in this cauldron-like, high valley that is surrounded on all sides by mountains are having a disastrous effect on the health of its inhabitants. Moreover, the

rental of farmland for brick production is posing more and more problems due to the drop in soil fertility after the setting up of brick factories on this land. Subsequent farm production will see a drop in its yield, even if farmers use fertilizers. In addition, heavy trucks from the kilns are damaging the roads. In the long run, these factors will obviously increase production costs and curb the massive use of fired bricks in buildings.

What is more, the use of non-baked bricks made of compressed waste material and cement –processed without using heat from coal-fires – is now on the rise and offers an attractive alternative. For the moment, the general public prefers red-colored baked bricks, which are nicer to look at and allegedly of better quality. Yet this reluctance to adopt change is probably fleeting given the increasingly high quality of non-baked bricks, not to mention the lack of pollution when producing this new model, which is a major issue in the valley. Recent high-rise constructions in the region are not built using fired bricks. A drastic change is likely to take place in the years to come, which may lead to new types of factories. Like everywhere else, here modernity implies an unprecedented split between human beings and their natural environment. Inhabitants find themselves disconnected from the natural world. A new relationship, dysfunctional in many ways, is being established with the ecosystem.

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