

Professor R.P. Vyas Memorial Lecture Series - VI

Social History of Technology: Case of the Indian Blacksmith

Prof. Smriti Kumar Sarkar

Former Vice Chancellor,
Burdwan University, West Bengal

July 25, 2019

Prof. R.P. Vyas Smriti Sansthan

&

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Prof. R.P. Vyas : An Introduction

- ✧ Name : Prof. R.P. Vyas
- ✧ Date of Birth : 12th August, 1922
- ✧ Father's Name : Shri Aidass Vyas
- ✧ Mother's Name : Smt. Inder Kaur Vyas
- ✧ Qualification : M.A., Ph.D., LL.B.
- ✧ Career Graph : Started career as a Teacher at Rajput High School, Chopasni, Worked as a Lecturer at S.M.K. College, Jodhpur University, Associate Professor & Head of the History Department, University of Jodhpur (now J.N. Vyas University, Jodhpur) retired on 31st August, 1982.
- ✧ Teaching Experience : 32 years (Graduate & PG level).
- ✧ Research Experience : More than two decades
- ✧ Subject for Ph.D. : "Role of Nobility in Marwar 1800-1873 A.D." Rs. 2000/- were awarded for its publication by the University.
- ✧ Founder Member : (1) Rajasthan History Congress established in 1967.
(2) Shri Jai Narain Vyas Shikshan Sansthan, Jodhpur.
(3) Mahila PG Mahavidyalaya, Jodhpur.

✧ Awards :

1. Durgadas Gold Medal for meritorious service rendered in the field of History and Culture of Rajasthan and Education.
2. Maharana Kumbha award by Maharana Mewar Foundation for best service rendered in the field of history, literature and culture of Rajasthan, 1985.
3. Honoured by Jagdish Singh Gehlot Research Centre for valuable services rendered in the sphere of Education and History.
4. Rajasthan Hindi Granth Academy honour for writing books on history and culture of Rajasthan.
5. Honoured by Sodh Sansthan Shri Dungargarh Churu Rajasthan for research work and honoured by the title 'Itihas Shri'.
6. Jodhpur Royal House (Purva Maharaja Gaj Singhji) conferred 'Palki Siropav' in the year 2000.
7. International Biographical Centre Cambridge CBZ 3GP England nominated him : 'An International Man of the year for 1997-98' - A prestigious award.
8. District Collector Jodhpur honoured him along with a few personalities who did valuable services to the society in the respective fields.
9. Reverend Saint Satya Mitranand ji Giri honoured him for valuable services rendered to the society.
10. Nagrik Abhinandan by the Citizens of Jodhpur on 12-8-98 - Abhinandan Granth 164 pages published on 12th August, 1998. He was honoured by a cash award of Rs. 51000/-.
11. 'Marwar Ratna' for Life Time Achievement by Mehrangarh Museum Trust, Jodhpur, 2011.
12. Bharat Jyoti Award, Indian Friendship Society, New Delhi, 2013.

The Eminence of Dr. R.P.Vyas

Dr. Sobhag Mathur

Dr. R.P. Vyas is one of those historians who may be credited with contributing profoundly to the scientific historiography in modern Rajasthan. The development of Rajasthan history on regional lines is intimately associated with the birth of Rajasthan History Congress. Under the inspired leadership of Dr. R. P. VYAS, one of its founder members, it made an organised effort to study the history, society and culture of Rajasthan. His illuminating articles are based on new ideas and on reasoning based on the best available data. The process of critical study of political and cultural heritage of Rajasthan was initiated by James Tod. R. P. VYAS is one of those scholars who were greatly inspired by the ideas of Tod.

The year 1970 was a landmark in the life of R. P. VYAS, when he came to be associated with the Institute of Historical Studies, Calcutta. This institution, with its rich historical treasure and the inspiring band of devoted scholars, provided R. P. VYAS with what he had been craving for. R. P. VYAS maintained a lively interest in the affairs of the Institute and as one of its most energetic members, participated in the academic activities of this learned body by contributing new ideas in his numerous illuminating papers and also by taking the most useful part in scholarly

deliberations. In fact he utilised this body in the cultivation of knowledge and the publication major portion of his scholarly writings that marked him out as one of the foremost historians of modern Rajasthan.

The methodology followed by R. P. VYAS is typical of the older school. With his background of Rajasthan studies he relied more on literary evidences. But in all his works, he collected the material from all the available sources and studied them in original before drawing conclusions. R. P. VYAS devoted himself to the study of Rajasthan history with care and restraint imaginative insight. He unearthed original data, and used the evidences critically, inductively and with sympathetic insight. His historical methodology and the analysis suggested by his inspired a large number of students of Rajasthan history.

II

To begin with, we may refer to his article 'Biographical Sketches in Rajasthani Literature' (Institute of Historical Studies, Kolhapur, 1973, pp.179-95) that gave him a thorough acquaintance with the materials, The object of this paper of R. P. VYAS was to discuss briefly the origin of the Rajasthan literature with reference to the biographies of the persons of historical importance. The Rajasthani literature is divisible broadly in two parts, viz. the Jain literature and bardic literature, each being sub-divided into several branches. The bardic historical prose literature may also be classifical into various branches, viz. Khyat, Vat, Vachanika, Davavait, Hal, Ahawal, Haqiqat, Yadosatd,

Vansavali, Vigat, Tahkikat, etc. In his article R. P. VYAS not only displays the utmost care of an accurate scholar but also leaves the stamp of his scholarship in analysing the historical literature and arranging it for the modern scholars. Prabhandas and Kavyas are called by various names. Rasos, Vilasa, Prakash, and Guna, etc. The Mukta Kavyas include Duhas, Chandas, Geet, Rupak, Kavittas, Pawadas, etc. R. P. VYAS accepts that work on biographies found in Rajasthani literature cannot be strictly regarded genuine biographies but they do contain valuable historical information. They were mostly conceived by their authors not as historical texts but primarily as medium for showing their literary skill and ingenuity. However, R. P. VYAS realises the importance of the works of biographical nature which, though apparently dull, nevertheless constitute the very basis of history.

III

The initial motivation of R. P. VYAS for writing the paper 'Social and Religious Reform Movements in the Nineteenth and Twentieth Centuries in Rajasthan' (Institute of Historical Studies, Shillong, 1974, pp. 176-99) was to analyse the nature of renaissance in Western Rajasthan. He found that it was a thing of limited, partial and somewhat artificial dimension in comparison to the larger Indian Renaissance. As a movement it was confined to the cultured elite, the uneducated masses remaining untouched by it. R. P. VYAS was of the opinion that the growth of occupational groups, inter-caste marriages and as a result of the advent

of heterogeneous masses in this region, society became complex and caste-ridden. Inhuman rites like Sati, Samadhi and Scrana, the crude form of justice and excessive demand of neg were among the glaring evils. The position of women suffered a great setback. The people were traditional in outlook and conservative by nature. R. P. VYAS tells that as a result of establishment of British supremacy a considerable change was felt among the people. However, the introduction of railways, spread of modern education and impact of the press and newspapers made the people to abandon their old practices and adopt modern ways of living. Thus, Westernising and modernising movements of this region strengthened the forces which were against the traditional outlook.

IV

R. P. VYAS's article 'Administrative and Political Development in the Princely States of Rajasthan' (Institute of Historical Studies, Panji pp. 292-311) is important and relevant for looking into the impact of the colonial policy on the princely states of Rajasthan. The object of this paper was to study different trends of colonial policy and to assess their effect on economy, administration, politics and society of the princely states of Rajasthan. The colonial policy in India was 'personal', 'paternal' and 'purely irresponsible and despotic'. It was formulated on old concepts of exploitation, racial superiority and distrust on the states' educated classes. It led to the growing tension between the rulers and the ruled. The British Government

made no efforts to respond to the demands of the princely states. The transfer of power from the Company to the Crown did not bring any relief to the states of Rajasthan. The paramount power was aware of the need of reforms in the states but the viceroys like Mayo, North-Brook, Ripon, Dufferin and Curzon considered the princes as mere administrative agents. In the opinion of R. P. VYAS, reforms no doubt took place in the native states but they remained more apparent than real.

V

The historian of ancient Rajasthan differs from the historian of modern Rajasthan in his training and methods. A historian of ancient Rajasthan has not much to do with written histories. He has to make use of non-literary or unwritten sources. Therefore, he may have a wider vision, tolerant outlook and an 'agree to differ' attitude. In his article 'Source of the History of Ancient Rajasthan' (Institute of Historical Institute, 1978, pp.3-16) R. P. VYAS shows a knowledge of the nature of the source material and capacity to handle it. Among the non-literary sources, archaeological explorations, inscriptions and coins provide the most important materials for writing the history of ancient Rajasthan-temples, forts, buildings, statues, sculptures, terra cottas and pottery form an important source for tracing the history of the region. Literature is also a valuable source for the historical study of ancient Rajasthan but it is more literary than historical. One can expect on definite evidence for historical reconstruction from them.

According to R. P. VYAS the historian of ancient Rajasthan cannot be comparatively more objective than the historian writing on modern period.

VI

In this article 'Pali-An Emporium of Rajputana' (The quarterly review of Historical Studies, Vol. XVIII, No.3, 1978-79, Calcutta, pp.184-87) he has made an attempt to assess the importance of Pali as a commercial market in Marwar in the beginning of the 19th century on the basis of the information made available by Col. Tod and Lt. Alexander Burns. In recent years more and more historians of Rajasthan are attempting to study the socio-economic developments of Rajasthan. Unfortunately the studies made by some scholars reflect their obsession with a certain brand of ideology which distorts their historical perspective. But R. P. VYAS has no obsession, no influence of any ideology and is honest to his subject. According to him Pali from remote times had been the connecting link between the western sea coast and northern India. It was on the route through which the Malwa opium was exported to China and Western Asia. But with the arrival of the British whose commercial agreements were one-sided, the situation changed. Their economic and trade operations caused hardship and loss to Pali.

VII

The pattern of the study of regional history is changing. The recent trend is more and more towards the

writing of social and economic history-history of the common man, and not of princes. This is quite welcome. R. P. VYAS in his article 'Anti-British feeling Amongst the People of Rajasthan (1818-1857): An Appraisal of Contemporary Bardic Literature' (The Quarterly Review of Historical Studies, Vol.XIV, No.4, 1974-75, pp.203-13) does not simply made a collection of facts; he makes generalisations too. He has based his paper on Bardic literature. This literature is accurate in so far as it reflects social condition but is very defective in so far as chronological sequence is concerned. According to Dr. R. P. VYAS 'literature being a mirror of the society helps us to understand the society in which it is produced.' It is, therefore, true that bardic literature provides a fairly good picture of the history of the region and society but its value as a source for political history is insignificant.

VIII

In Jodhpur, when Dr. VYAS taught in the University for more than two decades, Rajput history attracted many students, some of whom in their later life made valuable contributions to the subject. He came into contact with many students and teachers of history of the different parts of the state. As Secretary of the Rajasthan History Congress, he maintained contact with scholars working on different aspects of Rajasthan history. His advice and guidance were freely asked for and generously given. Therefore, his influence on the progress of historical scholarship in Rajasthan has been both wide and deep. His qualities of

head and heart enabled him to rise from the humble position of a school teacher to one of the foremost historians of the state and educational administrator. Every student of Rajasthan history acknowledges his contribution to the history of the region.

Dr. Smritikumar Sarkar

Former Vice-Chancellor

UNIVERSITY OF BURDWAN

Rajbati, Burdwan-713104

West Bengal, India

Personal Data

| | |
|-------------------------|--------------------------------------------------------------------------------------------------------------|
| Permanent Residence | : 57/2, B C Chatterjee Street, Kolkata-700 056, W. Bengal, India |
| Tel. ® | : 91 033 2564 4173 & 91 9433263293 |
| Email | : smri4173@dataone.in & smritikumar.karigar@gmail.com |
| Academic Qualifications | : M A (First Class Third) 1973 & Ph D 1992 from Calcutta University |
| Recipient of | : National Loan Scholarship, DPI Merit Scholarship, UGC Junior Research Fellowship & UGC Teacher Fellowship. |
| Experience | : Teaching since 1977 : Five Years' Administrative Experience as Head of the Department |

Specialization & Areas of Research Interest

Social & Economic History of Modern India, Indian Artisans, Blacksmith Tribes, Traditional Technology and Rural Economy & Society

Academic Status

Research Experience & Specialization

- Three decades experience of working on the unorganized sector of Indian economy.
- Worked on Indian Artisans, India's Blacksmith Tribes & Traditional Technology.
- Built up an extensive information and knowledge retrieval networks based on Eastern India.
- Language skill: Bengali & Hindi with working knowledge in Oriya and Assamese.

Awarded Major Research Projects on

1. Tribal Blacksmiths of Colonial Eastern India by ICHR, New Delhi. 1996-1999.
2. Brass and bell-metal Workers of Bengal, by NISTADS, New Delhi. 1999-2001.
3. Social Roots of Craft Technique: Blacksmiths of Eastern India, by INSA, New Delhi 2000 - 2003.
4. Artisans in India: Social Organization of Production, by UGC, New Delhi, 2003 to 2006.

Visiting Fellow:

- Zakir Hussain Centre, Jawaharlal Nehru University, March 2007.

Acted as a Resource Person to

- Royal Institute of Technology, Sweden; Dhaka University, Bangladesh and Voice America Radio, Washington.
- Planning Commission, UGC, Indira Gandhi National Open University, Indira Gandhi Rashtriya Manav

Sangrahalaya, Bhopal, The Asiatic Society, All India Radio, Calcutta.

- Universities of Kumaon, Utkal, Berahampore and F. M. of Orissa; Gauhati and Dibrugarh of Assam; Calcutta, Jadavpur, Rabindra Bharati, Burdwan, Vidyasagar, North Bengal, and National University of Juridical Sciences of West Bengal.
- University Grants Commission, West Bengal College Service Commission, SLET Commission (N. E. Region), Public Service Commissions of Punjab and Bihar.
- Member, P. G. Board of Studies, Jadavpur University, 2007-

Major Research Publications

Book : TECHNOLOGY, DEVELOPMENT AND SOCIAL CHANGE, RURAL BENGAL BETWEEN 1830 AND 1960 (Forthcoming)

Invited Contributions for Chapters and Papers

A. International Level

1. 'Social Organization of Artisan Production in India: Changing Role of the Market, Technology, and Merchant-Creditor: 18th to 20th Centuries' in Binay Bhushan Chaudhuri (Ed), Economic History of India from Eighteenth to Twentieth Centuries, PHISPC, Vol. VIII Part 3, (Delhi, 2005), pp. 107-354. ISBN 81-875886-23-0.
2. 'Studying India's indigenous iron industry: Looking for an Alternative Approach' in Jan af Geijerstam and Girija Pande (ed.), Tradition and Innovation in the History of

Iron Making in India and Europe : An Indo-European Perspective, (Nainital, 2003), pp. 205-224. ISBN 81-86246-19-3

3. 'From Agaria to Lohar: Blacksmiths in the Tribal Society of Colonial Eastern India' in Journal of Indian Anthropological Society, 32 (1997), pp. 139-154
 4. 'Caste, Occupation and Social Mobility: A Study of the Kansaris in Colonial Bengal', in W. v. Schendel, S. Bandyopadhyay and A. Dasgupta (ed.), Bengal: Communities, Development and States, (Delhi, 1994), pp. 65-89. ISBN 81-7304-089-3
 5. 'Unseen Sources and Unknown History: A Study of the Primitive Smiths of Colonial Eastern India' in The Indian Archives, Golden Jubilee Number, Jan-Dec., 1997, National Archives of India, Government of India, New Delhi, pp. 167-172.
 6. 'Ethnic Plurality and State Formation in India - A Historical Perspective' in Journal of Indian Anthropological Society, 33 (1998), pp. 9-16.
 7. 'Lokavidya: Conceptualizing People's Housing in India, a case study of the Koch-Rajbansis of North Bengal' D P Agrawal (Ed), Traditional Technologies and Knowledge Systems in India Sponsored by the Infinity Foundation, Princeton, USA, Forthcoming
- #### B. National Level
8. 'Deindustrialization under British Rule', in YOJANA, A Development Monthly, (Planning Commission, New Delhi), Special Issue, August 2007, Pp. 29-35.
 9. 'From Artisan to Merchant: Looking From Below' in C

- Palit and P Bhattacharyya (Ed.), *History of Indian Business*, (Delhi 2006), pp. 193-220.
10. 'Understanding the Concept of People's Housing in India: Case of the Koch-Rajbangshi', *Journal of Historical Research* (Dibrugarh University), Vol. XIV, 2004, pp. 38-48.
 11. 'An aspect of Artisanal Technology in India - Some Methodological Arguments', in Arun Kumar Biswas (ed.), *History, Science and Society in the Indian Context*, (Calcutta, 2001), The Asiatic Society, pp. 125-158.
 12. 'On Craft Technique: Tribal Blacksmiths of Colonial Eastern India' in Vijay Kumar Thakur (ed), *Science, Technology and Medicine in Indian History Essays in Honour of Dr. Devendra Kumar Singh*, (Patna, 2000), pp. 217-252.
 13. 'Tribal Society in Transition: A Study of the Primitive Blacksmiths in Early Colonial Eastern India', in S. C. Padhy and S. K. Panda (ed.), *Society Culture and Polity in Eastern India*, (Berhampore University, 1999), pp. 92-102.
 14. 'Indian Craft Technology, Static or Changing: A Case Study of the Kansari's Craft in Bengal, 16th-18th centuries', *Indian Journal of History of Science*, (Indian National Science Academy, New Delhi), Vol. 33 (2), 1998, pp. 131-142.
 15. 'Pre-modern Iron-smelting: A Study of Blacksmiths in the Tribal society of Colonial Eastern India', *The Proceedings of the Indian Historical Records Commission*, 56th Session 1997, Jabalpure, National Archives of India, (Delhi 1998), pp. 97-107.

16. 'The Changing Image of the Craftsman: Blacksmith in Colonial Jharkhand', in *The Calcutta Historical Journal*, 18 : 2, July-Dec. 1996, pp. 67-85.
17. 'The Rice Milling Industry in Bengal: A Study of the Impact of Mechanization on the Local Peasant Economy', in *The Calcutta Historical Journal*, 13 (1-2), July 1988-June 1989, (University of Calcutta) pp. 1-111.
18. 'Technology in Indian Artisanal Industries: A Case Study of the Metal Workers of Bengal', in *Keynote Papers of the Second Congress of the Traditional Sciences and Technologies of India*, (Madras, 1995).
19. 'From autonomy to subordination: a study of the changing organization of artisanal production in colonial Bengal; the cases of the Kansaris and Shankharis', in *The Calcutta Historical Journal*, 16 (2), July-Dec., 1994, pp. 105-151.
20. 'Perspective of Rural Bengal: A Study of the Impact of Mechanization, 1920-1950', in *The Proceedings of the Indian History Congress*, 51st Session, Calcutta, 1990, pp. 625-632.
21. 'Ethnicity, Society and State in India: Conflict and Collaboration - An Historical Outline.' in Danda, A. K (ed.), *Ethnic Plurality and State in India*, Asiatic Society, Calcutta, Forthcoming.

C. Regional Level

22. 'Aupanibeshik Banglar Karigar Samaj: Utpadaner Samajik Sangathan', in *Lokashruti*, Government of West Bengal, Vol. 15, (Calcutta, September, 1999), pp. 12-22. Reprinted in Sekhar Bhaumik (ed), *Sampratit Itihas Charcha*, (Calcutta, 2005), pp. 132-143.

23. 'Prasanga Karigari Krit-Kaushal: Purba Bharatbarsher Janajati Samaje Lauhakar', in Aparajita Bose (ed.), *Bharater Itihase Bigyan O Prajukti*, by Bangiya Bigyan Parishad, (Calcutta, 1997), pp. 117-142.
24. 'Sankhobaloy O Samajik Sachalata' in *Itihas Anusandhan*, (Calcutta, 1992), pp. 281-288.
25. 'Bhabanipur: Prak-Upanibeshik Kolkatar Pratham Shilpakendra' in *Itihas Anusandhan VI*, (Calcutta, 1991), pp. 218-227.
26. 'Howrah Ramkrishnapur: Unish Sataker Kolkatar Chaler Bazar' in *Itihas Anusandhan*, (Calcutta, 1990), V, pp. 320-328.

Presentation of paper at the

International Seminar

1. International Seminar on Culture of Indigo - Exploring the Asian Panorama at the India International Centre, New Delhi, November 29 to December 1, 2007. Paper: Traditional Indigo Dyers of India: an ethno-historical study.
2. Delivered a One-hour Radio Talk on the International Hook up of the Voice of America Radio responding to questions from 17 Countries all over the world on 16 August, 2007. Theme: Islam and International Terrorism: South Asia Chapter.
3. International Seminar on Contesting Identities: Tribes, Indigenous Peoples and Adivasis in Colonial and Post Colonial India, held at the Department of History, Visva Bharati in collaboration with the SOAS, University of Cambridge, 26-27 September 2005. Paper: Conceptualizing a Category or Continuum: the Case of Asur of Agaria.
4. International Workshop on "Facilitation of Trade and Transport Cooperation between India and China", sponsored by the Indian Council of Social Science Research (ICSSR), Government of India, and organised by the South Asia Research Society, in collaboration with Moulana Abul Kalam Azad Institute of Asian Studies (MAKAIAS), Kolkata, and Peace Studies Group, Calcutta University, on 27-28 November 2003 at the Park Hotel, Kolkata.
5. International Conference on the Environmental History of Asia held at the Jawaharlal Nehru University in collaboration with the Melbourne University, Australia, 4-7 December, 2002. Paper: Unseen Sources and Unknown History: Exploring the Self-Image of the Forest based Iron-smelting Tribes of India - 18th to 20th Centuries.
6. International Seminar on the Traditional Knowledge Systems organized by the Infinity Research Foundation, Princeton, New Jersey, USA and held at Winsar Mountain Resort, Almora, 4-7 October 2002. Paper: Lokavidya: Conceptualizing People's Housing in India, a case study of the Koch-Rajbansis of North Bengal.
7. International Seminar on the PHISPC volume on Economic History of India 18th-20th Centuries, held at the Centre for Civilizations, New Delhi, 19-20 April 2001.
8. Acted as a Resource Person in the Working Group on Industry in the International Workshop on Promotion of Investment and Trade in the Eastern South Asia Sub-region (Bangladesh, Bhutan, India, and Nepal), sponsored by the South Asia Research Society, Kolkata and the Ministry of External Affairs, Government of India, held at the Great Eastern Hotel, Kolkata, from 18-19 October 2001.

9. Presented a paper and acted as a Resource Person in International Seminar on The History of Iron Making in India, sponsored jointly by the Royal Institute of Technology, Sweden and the Kumaon University, held at Nainital from 8 to 11 March, 2000.
10. Presented a paper at the International Seminar on the proposed PHISPC volume on Economic History of India 18th-20th Centuries, held at the India International Centre, New Delhi, 13-14 December 1999.
11. International Seminar on 'Village in Bengal History and Culture' organised by the Centre for Advanced Research in Humanities, Dhaka University, Bangladesh 22-24 February 1998.

National Level Seminar

12. National Seminar on Resistance Against Colonialism: Life and Times of Veer Surendra Sai, held at the Sambalpur University, Orissa on 08 March 2008. Delivered lecture as Guest of Honour. Theme: Veer Surendra Sai: Locating the Local Hero in the Contemporary National Perspective.
13. National Symposium on 1857 held at the Utkal University and organized by the Orissa History Congress, Bhubaneswar on 22 December 2007. Delivered the Keynote address. Theme: 1857: Looking from the Below.
14. National Workshop on Human Rights at the Indira Gandhi Centre for National Integration, Visva Bharati, 23 February 2007. Paper: Globalization of Indian Economy: Denying the Artisan his right to livelihood.
15. Delivered an one-hour talk at the IGNOU sponsored

- National hook-up of the All India Radio on the occasion of the Hundred Years of Gandhi's launching Satyagrah in South Africa on 11 September 2006.
16. National Seminar on Economy and Society in Modern India at the Department of History, Visva Bharati, 12-13 March, 2005. Paper: Tarashankar's Ganadevata: a study of the transition of Village based relationship.
17. National Seminar on Bengal: from the First to Second Partition in the History Department of Rabindra Bharati University, Kolkata 22 March 2005. Paper: The Swadeshi Reconsidered.
18. National Seminar on Iswar Chandra Vidyasagar and Social Transition in Modern Bengal organized by Vidyasagar College for Women in collaboration with Victoria Memorial Hall at Darbhanga Hall, Calcutta University on 25 September 2004. Paper: Technology and Development: Rural Hinterlands of Colonial Bengal.
19. National Seminar on the Business History of India at the Department of History, Jadavpur University, 15-16 March 2002. Paper: From the Artisan to the Merchant: Looking from the Below.
20. National Seminar on Rural India in the History Department of Rabindra Bharati University, Kolkata, May 2002. Paper: Changing Scenario of Rural Bengal: Case of the Artisan.
21. ICHR sponsored National Seminar on Rural Bengal: Society and Economy, the Colonial Period and After, held at the Department of History, University of Kalyani, 18-19 December 2000. Paper: Social Organization of Production: Artisans in early twentieth century Bengal.

22. National Seminar on the Native kingdom of Kamta-Kochbihar (in connection with the releasing of a book on Koch Behar by Rajmata Gayatri Devi) held at the Department of History, University of North Bengal, on 20 April, 2000. Paper on Lokavidya: A Study of the concept of People's Housing among the Rajbansis of North Bengal.
23. Presented a Paper on the 'Social Mobility of the Artisans: Study of the Kansaris of Bengal' at the Seminar on Communalism and Casteism in South Asia sponsored by the Indian Council of Historical Research, New Delhi, and held at the Dept. of History, University of Calcutta, 11-12 April, 1992.
24. National Seminar on Situating Tribals in Indian History, organised by the P. G. Department of History, Berahampore University, Berahampore, Orissa, 24-25 March, 2000. Paper: Technique et Culture: Tribal Society of Jharkhand.
25. National Symposium on Indian Metallurgy, held at the Anna University, Madras, 27-31, Dec. 1995. Paper: Indian Craft Technique: a Case Study of the Braziers of Bengal.
26. National Seminar on Society, Culture and Polity in Eastern India, Sponsored by the UGC and held at the Berhampore University, Orissa, 21-22 March 1997. Paper: Tribal Society in Transition: a Case Study of the Primitive Blacksmiths of Eastern India'.
27. National Seminar sponsored by the IHRC, National Archives and held at Rani Durgabati University, Jabalpure, M. P., 4-5 February, 1997. Paper: Pre-modern Ironsmelting: A Study of the Blacksmiths in the Tribal Society of Colonial Eastern India.

State Level Seminar

1. Seminar on Bharater Bigyan O Prajukti jointly organized by the Bangiya Bigyan Parishad and Paschimbanga Itihas Sangsad at the Bangla Academy, Calcutta, on 11-12 August, 2000. Paper: Karma Kaushal: Purba Bharatbarsher Janajati Samaje Lauhakar.
2. Seminar on Lokasanskriti O Itihas, organized by Folk and Tribal Welfare Centre of the Government of West Bengal at Bangla Academy, Calcutta on 25 June 1998. Paper: Upanibeshik Banglar Karigar Samaj: Utpadaner Samajik Sangathan.
3. Seminar on Adibasi Samaj O Sanskriti held at the Department of Folklore, University of Kalyani, on 20-21 February 2001. Paper: Asur-Agaria Louhakar: Adibasi Sanskritir Annya Rup.
4. UGC sponsored National Seminar on Recent Perspectives in Indian History held at Mahisadal Raj College, Midnapore, on 13-14 February 2001. Paper: Samajik Itihas: Prasanga Baratiya Karigar.

Special Invited Lecture

- Zakir Hussain Centre, Jawaharlal Nehru University, 19 March, 2007. Theme: New Technology in Old Environment: Rural Bengal since the mid-nineteenth Century.
- Annual Lecture at the Department of History, Visva Bharati, 22 February 2007. Theme: New Technology in Old Environment: Birbhum since the mid-nineteenth century.
- Department of History, University of North Bengal on 31 March 2005, Theme: Oral Tradition as a Source of

History: Destitute Women in Rural Bengal, case of the Kutni (Husker).

- The Asiatic Society on 15 February 2001. (History of Science Programme), Theme: Tribal Metallurgy in India.
- The Asiatic Society of Bengal on 21 March 2000, (History of Science Programme), Theme: Artisanal Industry: a study of people's technology.

Refresher Course Lectures

1. Refresher Course on Recent Trends in the Historiography of Modern India, Department of History, Utkal University, 22-23 December, 2007.
2. Refresher Course on State and Society on Colonial and Post-Colonial India Department of History, Jadavpur University, 19 November, 2007.
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Freelance Writer

- To all leading Newspapers published from Calcutta such as The Statesman, Anandabazar, Bartaman and Dainik Statesman.

Social History of Technology: Case of the Indian Blacksmith

Smritikumar Sarkar

Problems:

'Technology' is the keyword of the 21st century. From the pre-historic to polymer and geo stationery, the term technology is used everywhere to mean a wide range of applied knowledge. Look at how the mobile phone has become an indispensable part of our life, up and down all across the social space. Each age has its own technology, either advanced or backward in relation to the time, location and space. From the pre-historic to the age of Chandrayan, technology thus remains an important parameter of social change in India. In the progress of civilization, the society which was equipped with a better technology could easily dominate the society with a relatively backward technology.

A piece of technology might be useful to a society but unusable to other at a higher stage of development. With restricted mobility, societies in earlier times were isolated from one another; hence used different types of technology in different locations. The physical isolation ended with colonialism, which interlinked the backward and advanced areas of development, a la W W Rostow, in an unparalleled way. Since technology was the primary Tools of the Empire, colonialism had unleashed a process of technology transmission to the colony. The transmission was a two-

way movement: from the mother country to colonial metropolis followed by its movement to the periphery, a process which in the end ensured the victory of European imperialism, a triumph of technology in reality (Daniel R Headrick, 1981).

Since technology throughout the ages was an important parameter of social change, historians all over the world used it as a useful tool of interpreting the history of human progress. They analyze how the new technology confronted the old; try to trace the course of technological change in society over the time and finally how it had affected the existing ways of life. Unfortunately, social history of technology has largely escaped the attention of serious historical research in India; due to the lack of attention to craftsmen and their tool techniques. Studies on traditional craftsmen thus mostly deal with often tiresome anecdotes of the trade and transaction of the industrial products of the pre-colonial India.

The lack of the research attention to India's age old productive techniques is due to the dominant influence of what has been described as the Whig historiography of industrialization (Raj Chandavarkar, 1985). This kind of historiography most often projects a unilinear view of 'progress', which was an outcome of the new technology following from the industrialized West. As the new technology slowly moved through colonial and commercial networks to the rest of the world, it wiped out their pre-existing productive techniques. Hence, the dominant notion of the history of technology considers the traditional production techniques largely as a piece of heritage studies.

Nobody would deny the importance of new technology in accelerating 'progress' over large parts of the world; but it is difficult to ignore that this kind of mono-centric focus projects only a partial reality. The strange paradox is that if a historical view is taken wider than that of the last three hundred years, the situation gets precisely inverted. Three hundred years ago, China and India were the virtual storehouse of knowledge and skill related to iron metallurgy and not Europe. What is important is not just the nature of the technology which made these countries great; but also what happened to that technology after it came to confront with the larger market networks. Did it wholly disappear or survive through the onslaughts of market since the early nineteenth century? If so, what were the factors that helped them continue in their trade?

Here, I would propose to take up these and some other related questions with reference to the Indian blacksmith, the master artisan of iron working in the old world.

I

Position of Indian Iron

It is widely recognized that India was the mother country of cotton exporting not just its textiles, but the technique of cotton cultivation and weaving to large parts of Asia. What is often ignored is that in the pre-colonial India was also a major centre of iron production. The quality of the steel produced in India was simply unmatched by contemporary standard even in the late seventeenth century.

Perhaps the best archaeological evidence of all these is the Rustless Wonder of India, the Delhi Iron Pillar.

Originally constructed in Central India in remote antiquity (a king reused the pillar to inscribe his order in 402 CE), which a Muslim conqueror relocated it to Delhi in the early medieval period. Manufactured by the forge welding of the wrought iron and famous for its rust free composition of the metals, the 7.21 metre high Delhi iron pillar, weighing nearly six tones, still stands as 'a living testimony to the skill of metallurgists of ancient India' (Balasubramanian, 2005). A similar metallurgical feat is the huge Konarak beams used in supporting the upper part of the early medieval rock temple. Exposed to the effects of saline weather of the adjacent sea, these beams have withstood the ravages of time and are still intact.

Much has been written about the Delhi Iron Pillar; while some scholars have also studied the Konarak beams. Nevertheless, the question as to who had actually produced the metal used in all these or what were their tool-techniques still remains unanswered. Yet, the earliest reference to the production of iron in India by the forest dwelling backward social clusters dates back to the 4th century BCE. Here, the scholars must have stumbled at the absence of the necessary source materials. The group associated with the craft skill, which colonial ethnographers later referred to as tribe, survived down the time line; to come under surveillance of the early European observers mapping the resources and people in different parts of India. The fragmented evidence on them and their manufacturing methods including tools thus began to surface for the first time in the early colonial records.

India was one of the major producers of iron and steel,

the relative cheapness of the metal in and around Delhi by contemporary standard is attested by the late sixteenth century chronicler Abul Fazl (S. Moosvi, 1987). Indian iron seized the attention of the Dutch traders. In the 1660s, they exported huge quantities of iron and steel products from the Coromandel Coast of India to Batavia, Indonesia. They had first started with the Indian steel, ingots, which at that time enjoyed the status of luxury goods in the Asian trade. The volume of this trade picked up quickly, and got diversified.

Following the practice of the Persian iron merchants camping in India during the production season, the Dutch in the seventeenth century started engaging local blacksmiths to manufacture nails, cannon balls, bars and bands of iron, which they exported to Indonesia in large quantities. In 1820, Dr Voice came to meet one Persian merchant, Haji Hosyn (Hossain) from Ispahan at the Coromandel Coast. A similar merchant was Abraham ben Yiju of al-Mahdiyya of Tunisia, who had been living in India for two decades. European or Asian, the observers were unanimous on one point that the quality and toughness of the Indian steel produced in the simplest and crudest possible method by localized workgroups were simply unmatched by contemporary standard.

Here, I would try to locate the Indian blacksmith in the old environ of his works admitting the limitations imposed by the paucity of necessary sources. The artisan of the artisans, the Indian blacksmith, has largely escaped the attention of earlier scholars. One could call it just an initiative to draw attention of more competent scholars in future.

Surviving down the time line, the blacksmith had remained largely obscure till they surfaced in the early colonial literature. We came to hear about them for the first time in the Dutch records; since the Dutch East India Company in the 1660s had been exporting huge quantities of iron and steel products from the Coromandel Coast of India to Batavia, Indonesia.

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II

Iron-smelting Blacksmith

From the collection of ores and its reduction to iron, manufacturing and fabrication of the metal into useful articles, the blacksmith represented a wide range of activities. He made the tools for the artisans and agricultural

implements for the farmers. Even the king was dependent on him for the supply of his arms and ammunitions and their regular upkeep. Not unnaturally, the blacksmith formed an inalienable part of the royal contingent everywhere; often living on royal grants, or what could be called the Rajapadopajibi.

Sabyasachi Bhattacharya was perhaps the first to study iron smelting as an industrial activity, also with reference to the Jharkhand region, based largely on the nineteenth century records. Following Percy's Metallurgy, he had classified the pre-modern iron works of India into three groups - primitive, intermediary and capital-intensive. His study makes a good introductory outline, though it fails to locate the actual worker engaged in these activities.

The blacksmith broadly represented two groups described here as the iron-smelter and the blacksmith. Early societies all over the world treated the blacksmith with a sense of both fear and awe, attributed to his craft and the metal. An elaboration of this status remains outside the scope of the present discussion. In brief, he was regarded as a priest and the magician, who could drive away the evil spirit, because the metal he worked with was considered sacred and like all other sacred objects it was both 'dangerous and beneficent'. This is clearly reflected in the ambivalent attitude of the tribes of Jharkhand in general towards the Asur, who enjoyed the status of the primordial smith in the Indian tradition associated with iron smelting.

The Asur blacksmith acted as a miner, smelter, and the manufacturer of iron - all in one, who himself collected and prepared the fuel needed for his craft, and exchanged

his products for the food grains produced by others. Not unreasonably, he used only a minimum number of tools, possibly nothing more than his hammer, tong and the bellow, often using a makeshift stone as his anvil. In collecting fuel and iron ores, he worked in a group while his wife assisted him in preparing the fuel/ores and in blowing the bellow.

Identifying the ore and smelting the same into iron required a specific skill handed down to generation in close kin group based social formation. In parts of India, where iron ore is available almost at the surface level, similar diverse groups of people were engaged in iron smelting. From the nomadic to the village based smelters working to merchant order, the craft included heterogeneous backward social groups, whom the colonial ethnographers rather erroneously described as tribe.

The Asur and Agaria were two major iron-smelting tribes of India. The study of the blacksmith and their forge has always fascinated the ethno-anthropologist all over the world. But, here I would restrain myself from diluting the focus of our discussion - the blacksmith and his tool techniques in the main. I will elaborate the position of the iron-smelter with reference the early blacksmith of Bihar-Jharkhand and the north eastern states of Assam, Meghalaya and Arunachal Pradesh. The discussion shows wide variation in tool techniques used by the iron smelters of these states and their relative status. Another interesting point emerging here is the absence of linkages between the regions which could be attributed to the influence of the different merchant groups. All these and similar other issues have never come under discussion yet they are crucial to our

understanding of the material base of our civilization since iron was vital to social development.

The heterogeneity of iron smelting groups also indicates the existence of different tool techniques at different levels of development. This difference in tool techniques could be clearly located through the available reports on them. Some of these groups continued well into the nineteenth century. If we consider the organization of iron smelting as a pyramidal structure, nomadic groups worked at its bottom, possessing easy to carry miniscule tools and smelt the iron wherever they could scrub out a little amount of ores and barter the metal with the nearby village for their necessities, food in the main. Sometimes, these nomadic smelters carried small packs of iron ores with them to meet an exigency of demand for their craft. The relatively static demand for their product forced them to move on from place to place in search of the village willing to take their services.

Then, there were some peripheral groups of smelter residing at a corner of the village or a group of villages. In remote location, their tool technique looks poorer to the nomadic groups. In two cases, women are found working in the furnace, which is significant in view of the prevalent taboo against the participation of women in a number of craft activities in India. Why were they allowed to work in this craft therefore could be an interesting question. In contrast to all these, we come across small clusters of iron-smelters who were better organized producing iron with merchant collaborations. The study of iron-smelting tools also showed a remarkable variety and hierarchy of craft

techniques, traditionally used in extracting iron which in some parts of India survived till the late nineteenth century. What actually helped them continue in their occupation was the location specificity of their craft. The areas isolated by natural barriers and the lack of connectivity thus insulated the old life style of the local communities from the onslaughts of the market.

Comparing the design and operational techniques of a particular tool used by the diverse iron-smelting groups of different regions points to the important role of extraneous linkages. Thus, Dutch traders exporting iron from the east coast in the seventeenth century India brought about some modifications in the craft technique of the iron-smelters on the east coast, visible if we compare those with the tool-technique used in eastern India.

But, in regions far away from the south with remotest chance of intermeshing in the mid nineteenth century India we come across tool technique which was widely different from the technique used by the iron-smelters in their adjoining regions. The heterogeneity of its tool techniques and its modifications in some regions must have been done earlier at the instance of iron merchants of India catering to different markets.

By the early twentieth century, Indian iron produced in the traditional way went out of circulation in competition to the cheap imported metal. Scholars have described it as yet another example of deindustrialization. The point what is ignored is that in remote parts of the country, iron smelting continued in small domestic units well into the late nineteenth century. Blacksmiths all over India preferred

the indigenous metal for its malleability and toughness, but the problem they often faced was the relative scarcity of its supply. The expanding networks of new transport system which spread to all parts of India from the port cities distributed the imported metal far and wide. The imported metal was cheap and available in easy to use shapes; hence was readily acceptable to the blacksmiths.

Then the indigenous iron-smelting was charcoal base and hence was much dependent on the supply of specific varieties of forest wood. By prohibiting the collection of iron ores and fuel, the colonial forest rules thus struck at the root of iron-smelting in India and precipitated their decline. But, the higher ratio of wastage of all the important inputs - ores, fuel and time - to the yield per unit was perhaps the most important reasons of its decay in the changing reality of the old world.

III

The Village Blacksmith

The blacksmith was an integral part of the village system in India. Writing on the village community in India, Marx had for the first time drawn attention to Indian artisan as a service member of the community. He had distinguished two important features of Indian village economy: one was 'the domestic union of agriculture and manufacturing pursuits'; and the other 'an unalterable division of labour' based on traditional caste occupations. According to Marx, the village community in India selected a group of artisans and maintained them at the cost of the whole community, a notion Max Weber later on described

as demiurgic labour. It has been argued that in order to carry out their agricultural operations villagers needed the service of a group of artisans - say, a carpenter, a blacksmith, a potter, an astrologer and similar others - who were assured of a fixed share of the village produce so as to attract them to settle in the village.

The village smith suffered from a restricted demand for his craft confined to the agricultural cycles. The customary village bond by which he was obliged to serve the village in return of his customary share of the village produce was yet another problem. 'The village Lohar', W. E. T. Dobbs reported from Allahabad, 'is paid in the old-fashioned way by an allowance of grain. The amount he obtains varies with each district and in different villages of the same district. His occupation is purely hereditary. ... The ordinary smith is a handy man, and is often the village carpenter as well as smith, and may also be called for such work as lining a well.' Irrespective of his skill and work he could not claim more nor could he shy away his customary duties to the fellow villagers. In a situation such as this greater the skill greater was his tendency to move to the nearby market town with a relatively large demand for his craft.

Two factors restricted the low demand for his craft in the village. Firstly, agricultural implements in India in general had very little inputs of iron; hence the villager needed the carpenter more than the blacksmith. Secondly, the supply of iron in India was largely location specific and restricted by transport cost beyond the areas of its production. To village India in general, therefore, iron was

costly, which kept its use to the minimum, thus considerably reducing the importance of the blacksmith's role in village society. The customary practice of the villager was to supply the metal to the blacksmith in the form of old broken or unused implements, which he made into new articles of order. It explains why over a large part of rural India the village smith often had to combine his traditional function with that of the village carpenter, comparable with the north Indian Lohar, or the Niligundapanta smith of South India.

But in regions close to the iron-smelting areas, the situation was totally different. In the present-day Jharkhand region, for instance, the Lohar blacksmith received their metal from the nomadic Kol iron-smelter, while his Andhra counterpart from the Paria, who smelted the metal; although at the level of social relationship these groups were mutually exclusive. In northern Bengal, blacksmith making large sugar-boiling pan, or their counterparts in Munger, Bihar who manufactured guns and petty cutlery articles received the supply of iron from the merchant, who engaged them. This was in reality an extension of the village-based system of production, where the metal smith used to receive the metal from his customers. The tradition apart, it was also a question of the artisan's working advantage. The average blacksmith was much less dependent on the merchant for the supply of metal. Here the usual practice was for the consumer to supply the metal mostly in the form of scrap iron. The blacksmith recycled the metal and fashioned goods to the customer's specification.

The system of the village community retaining the blacksmith and other craftsmen on customary share of the

produce was not universal. In several parts of India with only a minimal demand for iron implements and tools, we come across groups of perambulating blacksmiths. They moved from the village to village, areas after areas in rotational cycles and catered to the occasional demand of their clientele. They also served like the village blacksmith: repairing old broken implements, tools or other articles of domestic use. Thus in Eastern Rajasthan we have a similar group called the Gadulia Lohar, literally the blacksmith with their carts. They moved with their forge and the tools in their carts, along with the members of their family; always ready to serve anywhere and at anytime whenever their service was called for. A similar other group was the Shikligars of Punjab and northwestern India. The important point to note is that although always on the move, blacksmith, such as the Gadulia Lohar or Shikligars represented a social cluster organized under their Panches, generally constituted of the most powerful members of their society.

In a similar situation such as this, the only source, where the villager could hope to procure new iron implements or tools and similar other fashionable iron articles of domestic use, was the fairs and festivals that were a part of the Indian rural life. Irrespective of its occasion and cutting across the faith, the essential character of these fairs and festival was that they catered mostly to the mundane interests. Bulk of the space where these fairs and festivals were organized used to have been occupied by eateries and shops selling consumer goods, durables and perishable articles. What is important here, the blacksmith's shops, like those of the carpenter, brazier and the weaver

formed an essential part of these congregations. Since these were seasonally cyclic and often spread over large areas, they met the demand of the metal in the form of these goods, which in the village households was handed down to the succeeding generations.

The blacksmith who assembled in these fairs and festivals with their wares usually came from the river based market. A number of points distinguished them from the village blacksmith discussed above. They were not bound by any customary bonds with the village or the place where they were settled. They were also distinct from the nomadic or perambulating smiths like the Asur / Agaria iron-smelter or the Gadulia Lohar. They were sedentary blacksmith with their permanent workshops located in market places. While others catered mostly to a relatively static demand, these market based blacksmith were more skilled and manufactured sundry articles to meet the diversified demand of a larger clientele. Finally, unlike the village smith, they did not depend on the supply of iron from their customers and procured the metal from the iron dealers. From the north to the south, we have interesting details of different groups of iron trader supplying iron to the blacksmith. The dependence on the external supply of iron most often forced these blacksmith to shift to the river based market town where such supply was relatively easier.

IV

Survival through adjustments

I would like to conclude the lecture with a brief reference to how the colonial intervention changed the old

world of the Indian blacksmith and how the latter had adjusted to these changes for their survival.

With steamer and railway services connecting port cities to their hinterlands, imported iron reached even the remotest market town; encouraging the blacksmith to disperse in one or two. The prices of imported iron in India also fell, as a result of the competition among iron exporting countries of Europe, also due to the growing competition among different shipping lines ferrying the metal to India. Available in more workable forms - bar, rod, sheet, ball, the imported iron was also easier to use.

The imported iron destroyed the traditional iron-smelting industry; but it helped the Indian blacksmiths to expand their trade. More than the procurement of imported metal in lump, they benefited mainly from the growing availability of the scrap, regularly auctioned by railway authorities all over the country. The iron merchant of the nearby market town brought this scrap to the village blacksmith. The result was a demand-induced expansion of the blacksmith's craft. Even in the erstwhile iron-producing districts, therefore, the number of iron-smelting furnaces fell, while that of the forges increased progressively. In the early twentieth century, a shift in favour of the iron working was also noticed among some of the non-blacksmith occupational castes.

The introduction of steamboats on the Ganges (1807) created new opportunities for the village Lohar of north India. Every steamer now had him as a member of its crew on a relatively higherpay, in addition to his regular recruitment to workshops of the government's steam

department. This was also largely true of similar other departments - the military, public works and transport in particular. The introduction of railways in India had further expanded these opportunities. In brief, the traditional blacksmith now became an indispensable part of the newly emerging industrial labour force. From the small engineering unit to the large railway workshop, canal companies, jute and cotton mills included, everyone needed his service. In fact, one of the pressing problems in the early years of industrialization in India was 'how to meet the large and an increasing demand for competent mechanics.'

The large concentration of traditional blacksmith groups into railway workshop towns, port cities, and industrial centres in India, represented a unique case of forward linkages, which earlier scholars in this field have mostly lost sight of. I would illustrate this point with reference to the industrial city of Howrah in Bengal. A small town on the western bank of the river Hughli opposite Calcutta, Howrah eventually emerged as a large centre of the engineering and manufacturing industries since the early years of the twentieth century, hence often described in contemporary literature as the Sheffield of the East. The industries at Howrah included mainly large-scale engineering units, railway workshops, rail and dockyards, jute and cotton mills, rice/flour/oil mills, besides innumerable turning and pattern shops, small iron foundries, and similar other trades ancillary to engineering industries.

A large concentration of the traditional black smiths thus emerged in Howrah to cater to a wide range of demand.

Blacksmiths came to Howrah in response to a market created by local industries for sundry hardware products not requiring great precision. Located in the midst of a large number of engineering establishments, both large and small-scale, black smithies in Howrah received cheap scrap of iron and steel, and similar other facilities such as casting or drilling catered to by numerous lathe and turning shops. Howrah blacksmiths had to operate in an industrial market catering to a new type of demand. Railway and government contractors, factory operators, and hardware merchants of both Calcutta and Howrah had been his principal customer, instead of the village agriculturist his ancestors had traditionally served earlier. He was thus required to produce not the scythe or sickle; but bolts and nuts or nails as stated above.

A change in the range of production should have changed, at least partially, the blacksmith's existing tool structure. But in reality, there was very little technological change, except perhaps the use of a battery of imported tools - such as chisels, pliers and measures - while the traditional bellow, the anvil and the hammer still remained basic to most of the smithies at Howrah. An expansion in the size of these family workshops seems to have at least partly compensated their deficiency in tools; their dependence on hired labour somewhere ranged between three and sixteen workers. In reality therefore it was a continuation of their traditional occupation in a new urban and industrial environment. In most cases, the blacksmith and his employees 'lived in the same place, ate and worked together,' a good number of them also 'sharing the earnings

of the workshop jointly with the workers', who were either closely related to them or had village ties.

Similar developments also took place in other parts of India, for instance in Punjab. Like Howrah in Bengal, Gujranwala in Punjab emerged as a new centre of the blacksmith's trade; producing mostly non-traditional items like iron safes, steel trunks, iron locks and keys, and other engineering items. The Gujranwala iron safes, also manufactured at Jagadhri near Ambala, 'were very widely used and exported in large numbers to most parts of India.' Manufacturing of iron safes was entirely a new industry, made possible by the availability of imported iron sheets in India. Well-built without the use of machinery, these safes, often with 'complicated and elaborate fastenings and locks', showed 'considerable ingenuity on the part of their manufacturers' and were 'quite creditable productions'.

Besides Gujranwala, a number of other towns in Punjab, like Amritsar, Lahore, Jullandhar, Ludhiana, Sialkot, and Multan, also attracted blacksmiths to cater to new types of demand. Apart from trunk and iron safes, items manufactured by them also included various cutlery items, locks and keys, and other artistic wares made from imported raw material. The surgical and veterinary instruments turned out at Sialkot were 'of a very superior quality'; so were also similar items produced at Jullandhar. Batala in the Gurudaspur district had a few iron foundries and workshops, where blacksmiths manufactured kharas or the flour mills, belna kamad or sugarcane presses, lathes, also including a large assortment of miscellaneous articles such as hand pumps, railings, bolts, screws, wheels, and etc. Largely made

of the imported cast iron, received from Karachi and Lahore, the Batala manufactures required great precision and skill, which the local blacksmith must have acquired on his own.

There could hardly be any doubt that the demand for traditional blacksmith's occupation expanded since the early nineteenth century, although the traditional iron-smelting and arms and ammunition manufacturing had declined. A continuous process of occupational shifts remained operative throughout most of the colonial period. But the most important point to note is that the traditional blacksmith's working knowledge of his craft had significantly broadened. Railway / canal, and similar other workshops, inducting a large number of the traditional blacksmith, often served as an important catalyst in the diffusion and systematic up-gradation of this knowledge.

V

Epilogue

How could this discussion be relevant to Indian historiography is a question the interested reader might ask at the end. The use of iron in India had, for some time, been a highly debated theme of early Indian historiography; the focus, nevertheless, remained largely on the antiquity of the use of iron in India and other related technicalities. The man behind the scene - the blacksmith who produced the metal largely escaped the attention they deserve barring a few, with the anthropologist similarly neglecting him. This discussion was thus aimed at supplying the missing link in the Indian historiography.

The discussion nevertheless suffers from a major shortcoming: the absence of any reference to construction of the Delhi Iron Pillar or the Great Konark Beams by the disorganised community of tiny blacksmith we talked about here. The shortcoming is simply unsurpassable for us due to the lack of connectivity between the antiquarian reference to the forest dwelling blacksmith cluster producing iron found in the 4th century BC Arthashastra and the later day colonial writings on the Indian blacksmith. The Ain-i-Akbari referred to the metal but not the people who produced it. The production of iron pillar or the beams called for the large-scale mobilisation of capital and labour and organised planning which only the king alone could do. Also involved were some scientific and technical hitches that had to be solved at a higher level of planning. But, nothing could be firmly resolved till we come across positive evidence for all these issues.

The discussion is a revision of the Juggernaut thesis that British rule destroyed the pre-existing system of production and dispossessed the Indian artisans of their traditional occupation. In the case of the blacksmith it appears that, although iron-smelting declined, all other branches of the blacksmith's craft had actually expanded. Not only that, there had been significant change in the traditional organisation of the iron industry by means of a good deal of relocation and an important expansion in the demand for his craft. The discussion also questioned the canonical view of the 'unchanging village community' in India with a posse of artisans bound to the village by customary norms. Here, we see that dissatisfied with the

limited demand for his work, the village blacksmith tended to shift to the larger market town in lure of the better reward for his skill. The blacksmith all over the world drew attention of anthropological studies, the important perspective which is out of the scope of the present discussion.

This discussion is entirely based on my following publications with the sources for the quotes used here.

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