



Of glass, skills and life: Craft consciousness among Firozabad's glassworkers

Arnaud Kaba, Shankare Gowda

► To cite this version:

Arnaud Kaba, Shankare Gowda. Of glass, skills and life: Craft consciousness among Firozabad's glassworkers. 2021. hal-03206522

HAL Id: hal-03206522

<https://hal.science/hal-03206522>

Preprint submitted on 23 Apr 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



USR 3330

"Savoirs et Mondes Indiens"

OF GLASS, SKILLS AND LIFE: CRAFT CONSCIOUSNESS AMONG FIROZABAD'S GLASSWORKERS

Arnaud Kaba

in collaboration with Shankare Gowda



Institut Français de Pondichéry
Pondicherry



Centre de Sciences Humaines
New Delhi

The Institut Français de Pondichéry and the Centre de Sciences Humaines, New Delhi together form the research unit USR 3330 “Savoirs et Mondes Indiens” of the CNRS.

Institut Français de Pondichéry (French Institute of Pondicherry): Created in 1955 under the terms agreed to in the Treaty of Cession between the Indian and French governments, the IFP (UMIFRE 21 CNRS- MAE) is a research centre under the joint authority of the French Ministry of Foreign Affairs (MAE) and the French National Centre for Scientific Research (CNRS). It fulfills its mission of research, expertise and training in human and social sciences and ecology, in South and South-East Asia. Major research works focus on Indian cultural knowledge and heritage (Sanskrit language and literature, history of religions, Tamil studies etc.), contemporary social dynamics (in the areas of health, economics and environment) and the natural ecosystems of South India (sustainable management of biodiversity).

Institut Français de Pondichéry, 11, Saint Louis Street, P.B. 33, Pondicherry-605 001, India.

Tel: (91 413) 2231609, E-mail: ifpinfo@ifpindia.org

Website: <http://www.ifpindia.org/>



Centre de Sciences Humaines (Centre for Social Sciences and Humanities): Created in 1990, the CSH (UMIFRE 20 CNRS- MAE) is a research centre jointly managed by the French Ministry of Foreign Affairs (MAE) and the French National Centre for Scientific Research (CNRS). Conveniently located in the heart of New Delhi, the Centre produces research in all fields of social sciences and humanities on issues of importance for India and South Asia. The main themes studied by CSH researchers include territorial and urban dynamics, politics and social changes, economic growth and inequalities, globalization, migration and health.

Centre de Sciences Humaines, 2, Dr. Abdul Kalam Road, New Delhi-110 011, India.

Tel: (91 11) 3041 0070, E-mail: communication@csh-delhi.com

Website: <http://www.csh-delhi.com/>

Cover photo: Bolvalas/gundivalas running to pick the glass in the oven to distribute it to the various stations. (Photo: A. Kaba, September 2019).

© Institut Français de Pondichéry, 2021

© Centre de Sciences Humaines, 2021

CSH-IFP Working Papers - 18

Of glass, skills and life:

Craft consciousness among Firozabad's glassworkers

Arnaud Kaba

in collaboration with Shankare Gowda

2021

Institut Français de Pondichéry
Centre de Sciences Humaines

**Of glass, skills and life:
Craft consciousness among Firozabad's glassworkers**

ARNAUD KABA, Post-doc Fellow, Centre for Modern Indian Studies, Göttingen, associate researcher, Centre des Sciences Humaines, Delhi.

In collaboration with SHANKARE GOWDA, independent research assistant, for the field study as well as for the data analysis

Abstract:

Though so many women in India do wear the glass bangles from Firozabad, little is known about the daily life and subjectivities of the glass workers. This anthropological paper about Firozabad's glassworkers explains how their collective subjectivity, their craft consciousness has been shaped by their link to the glass, to the tool of production and its evolution, and by the city's social and political context. The first part describes the technological and industrial evolution of the cluster, the second explains how the subjectivities of the glassworkers are shaped by their craft consciousness, itself based on the reproduction of the communities which have access to the skills, the last part analyses the relationship of the workers with exploitation, social struggles and the attempts of autonomy.

Keywords; Firozabad, glass, labour, craft consciousness

Acknowledgments:

The paper I am presenting here is the outcome of two years research on Firozabad's glassworkers, done under my ICAS:MP fellowship, continued by three months of extension at the Max-Weber-Kolleg für kultur-und sozialwissenschaftliche Studien of the Universität Erfurt, and with a Postdoctoral Fellowship in the Center for Modern Indian Studies in Göttingen **funded by the Fritz Thyssen Stiftung**. I also had substantial support from the Centre de Sciences Humaines. I would like to thank the institutions involved and individually Martin Fuchs, Shail Mayaram, Chitra Joshi, Prabhu Mohapatra, but also Christian Strümpell, Layla Abu-Er-Rub, Gayatri Rathore, Michael-Peter Hoffmann, Supurna Banerjee, Jean-Thomas Martelli, Rémi de Bercegol, and Yann-Phillipe Tastevin, Maroussia Ferry for their help in intellectual discussions, and Ravi Ahuja for supporting the project. I also worked a great deal of the time with Shankare Gowda as a research assistant and he also helped me in the data interpretation. I want to thank both Alice Monicat and Jean Baptiste Clais who helped me greatly in thinking through the processes of evolution between labour, techniques and capital in the Indian industrialization process and to find archival material on the colonial formation of the glass industry in India. Finally, I would like to thank Arshima Dost for the copyediting

Introduction

On a busy winter morning of 2019 in Delhi, I was in a taxi heading for the International Center for Advanced Studies: MP which funded my postdoctorate fieldwork presented in this paper. While lost in thought, my eyes were attracted to the Ganesh¹ statue on the taxi's dashboard. I asked the driver, "Isn't that a glass Ganesh from Firozabad?" He replied, "Of course, I *am* from Firozabad, how do you know about the glass from my hometown?" As we started chit-chatting about the city and my research on glass work, I came to realize how central the historical tradition of glass production is in Firozabad, also called Shuhag Nagri – 'city of bangles' – and what this means for the identification of Firozabadis with their hometown and its glasswork.

This paper is about work cultures in Firozabad, a medium-scale city for Indian standards with about 600,000 inhabitants² situated in Uttar Pradesh, about 200 km southeast from Delhi and 40 km east from Agra. Firozabad is the biggest Indian centre for glass production. Owners, unionists and workers all agree that in this city, around 500,000 people work in the glassware sector, at home, in small workshops or factories. For this research study which focuses on the importance of skills and material culture for workers' self-identification, Firozabad is perfectly suited because of its century-old concentration on a single material which has connected different forms of labour by bridging gaps between the various skills involved in production. For example, the bangles from Firozabad are melted in the factories, completed in the workers' houses and decorated in small-scale workshops, thus combining three distinct forms of labour.

The city's glass industry has not yet received much attention in the literature, though Syed's PhD thesis (2011) is invaluable when it comes to global descriptions of the bangle production process and of the history and stakes of child labour, as is Chandra's (2009) paper. Sethi and Ghosh's (2008) study sets out important facts regarding Firozabad's technological history and the breaking point of gas conversion for the city's ovens, although they do not underpin the craftsmen's stories with any written material. Other authors (Rastogi et al. 2011) describe the health hazards encountered in this dangerous industry, exploring the efforts that have enhanced

¹ Ganesh is an elephant-headed Hindu god whose statues are supposed to bring luck to the owner.

² As per the 2011 Census.

or failed to improve safety for workers. However, there has been no anthropological research done on Firozabad's glass workers as yet – despite the popularity of glass bangles across South Asia, and the fact that there is hardly any woman in the region who has never worn the product of her labour: a glass bangle.

This paper argues that the development of Firozabad as a glass centre by the colonial authorities created a strongly hybrid relationship between craftsmen and the industrial world as well as between different forms of labour, low tech and (rarely) high tech. It thus strongly echoes the recent and eye-opening book from Douglas-E Haynes (2012), where he deconstructs long-lasting dichotomies between foreign-implemented industrial worlds and vernacular craftsmen societies in late colonial and early independent India. He stresses the importance of these craftsmen communities and centers upon the industrialization of the subcontinent. As we will see, this point is particularly relevant for a cluster like Firozabad.

I argue that in this context, the possession of skills remains essential for the development of hierarchies between workers, communities, castes and genders, defining one's position among the glass labour classes. Moreover, the cultures of glass mastery act to ensure craft consciousness: the identities and solidarities built on the communities of practices – the social groups bound by sharing the same occupation and the same skills (Wenger, 1998) – are mobilized as social forces to build solidarities, which are often vertical, often (but not always) strongly mediated by communitarian and caste affinities. The relations of labour to the owners of capital, industrialists, and tradesmen, shape a world where a consciousness of common exploitation spans across communities.

This paper looks at the relations within production processes, a stream which is mainly represented in South Asian labour studies by Geert De Neve's (2001, 2008) work in the Tirupur garment sector and David Picherit's (2009, 2016) studies on the bonded migrant workers of Telangana. While these two authors have given invaluable insights on the contemporary informal labour worlds in India, their scope concerns the everyday relations at the workplace, primarily understood as interpersonal: consent, resistance, negotiation (De Neve 2008, Picherit 2009), and trajectories of mobility (Picherit 2016). I look at these relations primarily in the context of the production process itself: the skills, the techniques, the relation to technology, and the work ethos (Kaba, 2014, 2018).

The question of skills in industrial work has not been much explored, except for Subramanian's (2008) excellent paper about Bangalore's IT workers. The anthropology of techniques in India until now has remained focused on pure craftsmen's worlds (Mahias 2011; Heuzé 2013; Brouwer 1996) and is anyhow quite poorly developed (Mahias 2006). Important contributions on craftsmen's cultures have been made and serve as a basis for this study, regarding cultures of independence (Kumar 1988, Heuzé 2011). Orlanda Ruthven's PhD thesis (2006) on the moral economy of Moradabad's metal workers is also very useful regarding the ethos of independence and the collective norms of craftsmen which share many common points with Firozabad's workers. Lastly, the recent book from Thomas Chambers (2020) on Muslim craftsmen of North India is an essential contribution to this field of study. The studies by both Ruthven and Chambers, who work in brass and wood clusters respectively, were undertaken relatively close to Firozabad and these forms of craftsmanship originated in Uttar Pradesh from the same source of Mughal patronage (Chambers, 2020). They describe this influence and its relation to crafts, and to independence of work, which combine with Muslim identities to shape these North Indian forms of craftsmen culture. I will here explore how the specific issue of skills contributes to shaping these cultures, and to transmitting them to other communities alongside skills, and to forming the bulk of a social consciousness related to the belonging of communities sharing similar relations with the craft material, here being glass.

Beyond the concrete examples of glasswork, I discuss in this paper the importance of this perspective, beginning with a discussion on skills. Marx, in 'Das Kapital', takes into account the example of the craftsman only as an earlier form of the proletariat in formation. It is obvious to him that in the near future, the industrial world will be automated and the worker reduced to being the assistant of the machine. American and British historians refer to 'craft consciousness' in this way when they are interested in the part of the English working class which escaped Taylorisation for a variety of reasons. Steve Smith (1981) uses 'craft consciousness' to describe the corporatist mindset among Russian skilled workers who, according to Rosenberg (1978), remained attached to their branch until the main phase of the revolution of 1917, while for Smith, the main attachment was to the firm. Selig Perlman (1970)³ argues that in the US, where class consciousness is lacking for historical as well as cultural reasons, it is job consciousness that really makes workers stick to one another. The use of the concept of 'craft consciousness' by these authors is embedded in quite outdated questions about the proletarian revolution, which therefore need to be reconsidered.

³ Perlman's book's first edition is from 1928.

I argue here that this concept can be reinterpreted to become truly relevant to describe contemporary realities, especially the world of Indian skilled informal labour. However, for this it must be relieved from the teleological bias which it contained in all the above Marxian visions in which it was either seen as a relic of the medieval past, or as something that develops in a very particular cultural context. I aspire to understand how craft consciousness, in post-Fordist and hybrid worlds, intersects with class, caste, gender and race. In this regards, Denis Segrestin (1975) had already reinvented Selig Perlman's theory in the 1970s, providing an interesting contribution by analysing – partly based on glassworkers' unions – how job identity and class identity can intersect in struggles and how unions play with it. More recently, Mollona (2005), when he studied Sheffield's factory workers, shows how the hot shop's skilled workers think of themselves more as independent craftsmen while the workers from the cold shop see their work as alienated and have a more class-oriented consciousness, both forms of consciousness being for him illusory formations to frame a state of deprivation and poverty. I argue that the analysis of the consciousness of such skilled workers, which were previously seen as pre-capitalist, unravels new ways to better understand contemporary labour. My paper takes ground in Firozabad's case study to argue that exploring the ways in which craft identities are articulated along with caste, gender and class, and how these identities can be a social force, can potentially contribute to the anthropology of labour by understanding how the skilled and craftsmen workforce articulates its mobilization with the less favoured layers of the Indian working classes.

The data presented here is based on 9 weeks of participant observation, informal discussion and 45 life stories collected between September 2019 and March 2020, including ten days spent on my own and the rest with Shankare Gowda. We continued to enrich the fieldwork even after the beginning of the COVID-19 crisis which stopped us from carrying out fieldwork physically. We collected over the phone the life narratives of ex-members of the main union, testimonies of workers during the COVID-19 crisis, and a total of 20 further interviews with craftsmen. We received updates via Facebook and WhatsApp with the contacts in the field. My position, as a non-white male French researcher working with a male Hindu assistant, came with limitations. We played on the fact that my father was of Muslim origin to correct the partiality that the Hindu identity of Gowda could create, but we still had difficulty, as in all my previous fieldwork, in gaining access to female narratives which would not be controlled by men who were always acting as mediators. I have anonymized the characters quoted.,

1. A world of labour begun by craftsmanship, and still heavily reliant on manual skills

The origins of the industry: narratives of Muslim craftsmen

While the origin of glassmaking in India is a much debated and uncertain topic, modern glass craftsmanship in India is definitely not older than 600 years, as it began with the immigration of Persian Muslim craftsmen (Sankalia 1947). Firozabad's industry, however, was set up only in 1908 by the British. Foreign glass specialists were invited to the region and helped develop the industries; the ovens were made after Japanese blueprints, and Austrian and German technologies were applied for the chemical mixes.⁴ Firozabad, however, was chosen for the establishment of the glass industry because here, a skilled workforce already existed. A regional caste of Muslim craftsmen, the Sheeshgarh, were already famous for their mastery of the bangle-making process.⁵ The production of bangles could pass from a one-by-one production by undivided labour in the traditional wood oven, to manufacture-type mass production with a strong division of labour, due to the intervention of Rustam Ustad (Syed, 2011).

Rustam Ustad was a Sheeshgarh crafts master who had begun the idea of a system made of a turning wooden axe on which a glass wire was rolled, to be cut into multiple un-joined bangles which were then finished in the households. The improvements in glass chemistry greatly enabled the enhancement of a shiny finish and improved the shades of colours of the bangles. The production diversified itself into a wide range of glassmaking during World War I because of import cuts but was then abandoned because of very competitive post-war imports of Bohemian glassware from Czechoslovakia (Syed 2011). Investments in technology stopped. The original idea had been to imitate foreign glass production, to concur with Bohemian and

⁴ Indian Tariff Board, Evidence Recorded During Enquiry on the Grant of Protection of the Glass Industry, p. 152. Consulté sur Archive. Org, URL: <https://archive.org/details/dli.csl.1633?q=report+indian+tariff+board+evidence+glass+industry>

⁵ For example, the 1905 Imperial Gazetteer of India for Agra District says that Firozabad's region already had a glass-making industry, in particular in Jalesar and Shikohabad. Imperial Gazetteer, Agra District, 1905, p. 82 for Shikohabad, p. 121 for Jalesar. Retrieved from Archive.org; URL: <https://archive.org/details/in.ernet.dli.2015.115695/page/n135/mode/2up?q=glass>. Then, a paper from the Times of India in 1916 praises how the Sheeshgarh successfully imitated Austrian bracelets; The Times of India (1861-current); Nov 17, 1916; ProQuest Historical Newspapers: The Times of India p. 7.

Austrian industries,⁶ but Firozabad failed quickly in this and the British seem to have lost interest in the city. From the 1930s, many complaints could be seen about the lack of support from the state in financial terms, but also for technological development.⁷ The city's industry was never ruled as such by the British but worked with local capital, namely the Hindu merchant castes, the Baniyas. Interestingly, the Sheeshgarh workers' and craftsmen's oral history of glass claims that Rustam Ustad travelled to acquire the technology, sometimes to Japan, sometimes to meet foreigners in Bombay, often to Germany. The community inverted the stigma of colonial domination in their narratives: instead of retaining in their narratives the import of technology with the help of German, Austrian and Japanese experts, they replaced these with fables of their patriarch who travelled and discovered foreign technologies himself, bringing them with him to Firozabad.

The city of bangles

Firozabad's glass production has always been considered to be not very competitive in the global market, because the glass lacks translucency. This does not affect the diversely colored decoration objects and beads for which transparency is not especially important, neither does it affect the city's specialty: bangles. Bangles were always the product saving the industry from its crises. 'Even the Baniya's wife needs bangles, that's why they still remain,' Khaliq explained to me in March 2020, a craftsman from Purdil Nagar, a neighbouring town of Firozabad, the only place where wood-oven bangles are still made. Though the COVID-19

⁶ The original idea was to compete with Austrian and Bohemian glass (Syed, 2011), as is clearly explained in a colonial report: 'Parsi firm, Messrs. B. Framroz & Co., have, since the outbreak of war, made considerable strides in the manufacture of bangles in imitation of those imported from Austria. They have discovered that suitable glazing materials can be obtained from England, and after a number of experiments have succeeded in constructing a muffle in which these glazes can be melted on to the bangles successfully.' Indian Industrial Commission Inspection Notes 1916-18 - Calcutta Superintendant Government Printing, India 1918, consulted on Archive.org, URL: <https://archive.org/details/dli.csl.832?q=INDIAN+INDUSTRIAL+COMMISSION+INSPECTION+NOTES+1916-18++-+CALCUTTA+SUPERINTENDENT+GOVERNMENT+PRINTING%2C+INDIA+1918>

⁷ This can be seen in a 1934 report that responds to a request for support from industrialists and reports numerous instances of the difficulties of the Firozabad industry in the post-war period. We can also see from the interviews given to industrialists in the report that they point out that the Austrian and Japanese experts were in fact employed for a relatively short time. Indian Tariff Board, Evidence Recorded During Enquiry on the Grant of Protection of the Glass Industry. Retrieved from Archive.org, URL: <https://archive.org/details/dli.csl.1633?q=report+indian+tariff+board+evidence+glass+industry>.

crisis disturbed the industry considerably, the local demand for bangles could help to keep it afloat despite the complete cut in export demand.

Bangle production is split between factory units, small decoration units, and finishing units in almost every house of the working-class neighbourhoods. The bangles somehow cover aesthetically the whole city. When one arrives in Firozabad by road from Agra, he has to pass through the industrial zones in which the glass factories are clustered, whose innumerable chimneys often bear Shaivite tridents or swastikas to show the Hindu identity of their owners, even if there are still a minority of Muslim bosses, mostly of small and medium sized factories, but also a few large ones.

On entering the town, the traveler will see a fresco about ten meters long depicting the bracelets and characterizing Firozabad as the ‘city of bracelets’. The Jain temple then marks the entrance to the old town, where the bracelets are exchanged and sold. A ballet of bangle-carriers push their carts filled with colourful bracelets through every single road of the historical old town. These men are also intermediaries of labour linking the various parts of this production system by managing the subcontracting of the labour between factories and households. The old town looks like a huge bangles market, with dozens of shops selling a thousand different designs available in Firozabad: plain semi-transparent, decorated with beads, shiny gold, with curved patterns or resin decorations.

Bangle production is a long and complex process with variations. To describe it in a nutshell, the central oven produces molten transparent glass, which is taken by the *balvala* or *gundivala* [glass ball carrier] with a rod, then cooled and shaped for the first time by getting rolled on iron bars by the *gullivala* [post-oven cooler]. It is then mixed with the coloured lass made by melting pigments in another part of the factory by the *bhattivala* [colour-applier]. The mixed glass is reheated in the main oven, to be cooled again, then shaped for a final time by the *paltvala* [reheating oven operator] and the *sikaia* [shaper] in a reheating oven. It is finally stretched to becoming a wire on a turning axis, by the *tarvala* [wiremaker] assisted by two *mutiah* [tarvala’s assistants]. The glass spiral is then cut, and the yet incomplete bangles are packed to be sent by the intermediaries to the houses and workshops for the other production phases. The whole process has improved in terms of efficiency over a long period of time. Technology did not change much since the beginning of the 20th century: the only innovation, in the late ’90s, were the automatic axes which spare the work of the *belenvala* [axisturner] who used to turn the axis by hand⁸. All workers’ narratives stress that productivity has always been

⁸ They are other roles like cutter, etc, but I summarize here the process.

improving, which suggests that the rhythm of the organization of bangle production has been increasingly tightened over time.



Gullivalas cooling the glass and *Chappaia* cleaning the color from the furnace's pots at night. Photos:

A. Kaba taken in October 2019

Beyond the bangles

The glass (non-bangle) industry produces decoration goods, glasses and bottles, light bulbs, or Dewar (thermos) bottles for the chemical industry. According to the narratives of industrialists, it developed firstly with technologies applied to bangle production. For example, the first glass items to be produced in Firozabad were extracted from pot furnaces used to produce bangles. As their productivity was low, they were quickly replaced by tank furnaces, which have a bigger chamber but are more expensive. Tank furnaces are also regenerative, meaning that one does not need to fill it with raw material at night and they can virtually work

24/7. According to the overlapping testimonies of industrialists and managers close to retirement, the late 1970s regenerative tank furnaces were introduced.⁹ These tank furnaces have two gas combustion chambers which can commute between combustion and evacuation.

As this 'glass' industrial process often involves more capital and more technology than the manufacturing of bangles, some engineers and managers can be met in the factories, but in small numbers. The workers who repair and build the regenerative furnaces do not have academic degrees, they follow blueprints and rely mainly on experiential technical knowledge. While some chains are automatic, there is still a lot of hand-blowing. The glassblowing process has hardly changed and fits any basic description of glassmaking in other parts of the world. One of the workers takes molten glass from the oven with a pipe, passes it to another worker who pre-blows it holding it bottom-up, then passing it to the next person, the blower will blow it upside down into a mold. The completed piece is sent to the last worker for cooling by rolling it. In Firozabad, extremely tight pressures on the work rhythm can be observed which is imposed by the factories.

A recent and minimal modernization ensuing with a concentration of capital

A bigger technological shift concerning Firozabad's glass industry occurred during the 1990s. In 1996, the Indian Supreme Court decided that coal furnaces should be banned in an area called Taj Trapezium Zone which encompassed Firozabad. At that time, the emissions of coal were believed to cause the acid rains damaging the Taj Mahal's roof (Sethi, Ghosh 2008). Forbidding coal, as an alternative the authorities only offered subsidized natural gas at an exceptionally low rate. Therefore, all small furnaces had to close, because their owners lacked capital for the necessary technological upgrade. Moreover, many of the small glass producers were settled in the old town where gas furnaces were also forbidden because of the thickly

⁹ Of course, these can only be broad estimates. The regenerative furnace is an old invention, the first one for glass being invented by the Siemens brothers in 1867. So the time of installation tells us more about when the industry becomes capital-intensive than about the technological inventions themselves. The industrialists only estimated the period which saw them becoming dominant in the (non-bangle) glass industrial landscape of the city. This whole question needs to be investigated further as the archive research suggests for now that the first glass industries were set up in the 1890s, the first one by a German national, and that they used Siemens regenerative ovens from the beginning, but that the Japanese pot furnaces were preferred after the bankruptcy of the first factories, using too much capital-intensive technology in a country where the skilled and educated manpower to use it was scarce. I am working right now on the colonial archives corpus to make this clear and explain the manifest difference between written sources and oral narratives which claim that these technologies were introduced quite late.

populated residential areas. Even the factory of Rustam Ustad's heirs had been closed after the coal ban, and they fought a case for years to be allowed to reopen with gas supply. New constraints implied by gas forced the industrialists to invest, using better material for the ovens and to raise the furnaces' production. This was also the start of automation with production chains made of hybrid technologies with European blueprints, cheap Indian machinery and mainly Chinese IT systems. On the glass industry, these measures had an effect of capital¹⁰ concentration which led to still more investments and to an orientation towards a more capital-intensive glass industry.

At the end of the day, the glassware industry is more modernized and capital-intensive than the bangles industry which is dominant and much more iconic of the city. However, compared to the other concurrent glass production centers, for example the Chinese which industrialists and traders in Firozabad often compare themselves to, Firozabad's glass industry still stays minimally modernized. This is because Firozabad's glass is comparatively of mediocre quality in terms of transparency: soda glass, made with silica sand from Rajasthan containing iron oxide which tends to add a green tint to the glass.¹¹ Now, the norm for high quality glass is often boro silicate¹², a technique which is more expensive than soda glass and which does not make sense in Firozabad because even with improved chemistry, the glass would still not look clear because of its impure silica.¹³ Therefore, Firozabad's industry started and lasted only because of the availability of cheap and skilled labour based on a familial

¹⁰ I was told by an expert manager that the subsidies, which ended in 2012, were the occasion for other big glass industries from South India or Gujarat to resettle in Firozabad to take advantage of the cheap gas rates.

¹¹ Sunit Agarwal, industrialist and Vice President of the Uttar Pradesh Glass Manufacturers Association.

¹² That was how the industrialists interviewed, especially Mr Agarwal, presented it. But things are never so simple; borosilicate glass is more modern, recent, and constraint resistant than the 'old' soda 'soft glass', but is less soft. For example, I am now learning to work with torch glass in a shared workshop in Berlin and here people work with soft and 'boro' glass. The choice between 'boro' or soft glass is also a matter of artistic taste. In Firozabad, I met some pipe-makers who used local 'soft' glass as well as imported chine 'boro' glass in the same piece of art.

¹³ A chemical procedure exists for removing the oxides from the glass but producing an equal quality will be then much more costly than in any other place in the world where silica is of good quality from the beginning.

transmission of skills that could make the industry work despite the total absence of formal training and proper engineering.¹⁴

This short historical discussion aimed at underlying how much Firozabad's industry is indeed representative of what Haynes (2012) explains regarding how the Indian industry indeed meant a lot to the small producers and craftsmen, and how the border between craftsmanship and industry is blurred in these kinds of clusters which are built upon craftsmanship traditions which last from the Mughal empire; the same thing could probably be said about the neighboring Moradabad (Ruthven, 2006). These kinds of developments are strongly deconstructed images of the Indian industry 'imported' from the West (Haynes, 2012), especially the formerly dominant representations popularized by Chakravarty (1989), who has a tendency to describe the industrial history of India as a conflict between 'indigenous' values and Western ideas of modernity.

Although the research on the origins of Firozabad's industry could and will be expanded upon, we can already see how complex the process is; there is a technological upgrading relying on a former craftsmanship, with the help of some foreign but largely vernacular capital, with the transfer of technologies from Europe as well as from Japan, with additional transfers of skills which upgrade the bangle makers' skills to industrial standards, and here, the archives suggest that the transfer from Austrian glassblowers¹⁵ was central. Still, Taylorization does not really occur, especially in bangle making, and until today, the industry is reliant principally on the skilled labour of former craftsmen. Even today, these worlds of labour look much more like network-linked manufacturers and craftsmen's workshops than Taylorian industrial settings, and this situation explains the strong links that the people of

¹⁴ Sunit Agarwal explained it very clearly: 'We should understand one thing why this industry flourished in Firozabad: just because of the labour, here in Firozabad we do not have any raw materials, no infrastructure, sometimes we say that all the raw material was available before the industry developed, but all the raw materials are mostly from Rajasthan or Gujarat. We have no raw materials around Firozabad. Only thing which we had was labourers who can withstand that heat and they had the artistic hand in continuity, how to make the glass, so that's why this industry flourished and previously the labourers' tradition was passed on from family to family and as and when, that's why there were a lot of relatives here; they were artisans and not literates. And then a new generation came in 1996 when the new technology was introduced, people started converting from manual to automatic.'

¹⁵ In particular a certain Mozina, who was the manager of one of the the biggest factories in Firozabad around 1910. See for example Indian Industrial commission inspection notes: 1916-1918, p. 12, Mozina's trajectory, from Austria to Rajpur, then Jubbulpore, Allahabad and finally Firozabad appears in the notes' appendix, pp.66-67. But my ongoing research on the archives reveals many stories of Austrian blowers, with more or less successful attempts to transmit knowledge, not only in Firozabad but also in Punjab, for example and probably in other parts of India.

Firozabad have to glass skills. Therefore, it is because of this complex process that the communities of practice (Wenger, 1998) and craft consciousness – the social forces built on these communities – are so central to the worker's subjectivities and interests, as I will demonstrate in the next section.

2 Craft consciousness in workers' subjectivities

Skills and communities of practice: shaping the glass workers' subjectivities

The relation of Firozabadis to the social consciousness built up in the communities of practice of glasswork is central for the shaping of workers' subjectivities, not only because it is the only industry where they find work but because as a low-tech and labour-intensive industry it is heavily reliant on skilled workers to organize the production process. In the factories, the workforce is normally monitored and recruited according to the *thekedari* system: skilled and trusted workers are given the possibility to recruit their teams among their relatives, from the city's labour market, or from the surrounding villages. There are almost no managers who have got a formal degree, especially in the bangles industry; and in the bigger automated factories, only a few engineers. It is the skilled workers, often from the Sheeshgarh community, who also do the jobs of overseer and supervisor to check the production, even invent new chemical batches, or of the specialists who design bangles and glass samples. Except for the very few engineers and managers who work in the big companies, the merchants, and of course the industrialists, almost all the inhabitants of Firozabad belong in some way to the glass working classes. Their social position within Firozabad's working classes is determined by their level of skills.

To understand how the subjectivities of workers are shaped by the relation of production processes in such a context, one must analyse where the skills come from, from which groups they originate, and how they are passed on to other groups. The identities at work can be either linked to a common confrontation of the working conditions, to the belonging to a company, or to the belonging to a corpse possessing a certain craft. It is the latter form of

identity that interests me here, and it is the bulk of the craft consciousness which is nothing more than the communities of practice in their dimension of social force.

In the bangle industries, the masters of the skills are, without any doubt, the *tarvalas*. They are therefore the cornerstones of the bangle making communities of practices. Getting paid sometimes more than three times as much as the other workers in the bangles factory (800-1500 Rupees instead of 240–500 Rupees per day) the *tarvalas* insist on their status of highly skilled workers in the factories, but also on their greater responsibility. In a sense, most work in the factory is done for the *tarvala* to make the glass spiral; if he fails in this delicate work, all the others' work is spoiled. Their margin of negotiation is higher: the skills they possess are rare. The *thekedars* I interviewed declared that they are the only workers who can negotiate advances. The only man I saw during my fieldwork who publicly and loudly opposed an overseer was a *tarvala*. In the workers' discourses, the *tarvala* is always referred to with a respectful tone. When I was inside the factories, workers kept focusing my attention on the *tarvala* work because in their eyes, he did the main work that I needed to understand if I had interest in bangle-making.

There is a particularly interesting and precise late colonial report on the glass industries in India from 1946,¹⁶ where the government employee, B.P. Adarkar gives an almost ethnographic description of the factory work in Firozabad, with very good tables of that time's wages and overall conditions. The author is, of course, focused on the role of the *tarvala* and the precision and concentration at length needed for his work,¹⁷ which the *tarvala* identity firstly derives from skills. The process by which the workers gain skills is not the topic of this paper (to be dealt with in another publication yet to come, Kaba forthcoming) but I want to stress how the possession of skills is crucial for rising in the hierarchies of the factory, a matter of status and survival and how getting them is a matter of getting accepted into a community of practices which is shaped by communitarian enmities but sometimes also intercommunitarian solidarities. It is widely recognized that one can get skills mainly by watching and practising, but the *tarvala* must already know what they have to do before being put in front of the axis to avoid important losses for the factory, so it is extremely difficult to learn the *tarvala* job just by observation, without being taught.

¹⁶ Report On An Enquiry Into Conditions Of Labour In The Engineering And Minerals And Metals Industries In India By B. P. Adarkar Member Labour Investigation Committee, 1946, Concerning Firozabad Industries: pp 13-31, consulted on Archive.org, URL: <https://ia801905.us.archive.org/34/items/dli.granth.109671/109671.pdf>



Tarvala stretching the glass in the oven to hold the wire, the instant the two pieces of glass merge to keep continuity and the wire. Photos: A. Kaba, taken in November 2019

To learn, a worker needs to be linked to a ‘master’ (Ustad) with whom he will develop an unequal relationship of patronage, which is typical of the skilled segments in India’s informal working sector (Kaba 2014, 2018; Breman 1996). In concrete terms, the apprentice needs to be related to the *tarvala* (like for example to an elder parent) or to seek his help by offering deference and submission. For example, Karim, a fifty-year-old *tarvala*, told me how he used to clean the shoes of his master before the latter agreed to teach him. But this does not mean that tips cannot also be exchanged on the shop floor between workers. Therefore, the establishment of some form of knowledge transmission is at the core of the possibilities of mobility to enter the working elite of the factories, and thus lies at the centre of the struggles

of power within the factory; as the integration in the communities of practices follows a spiral pattern (Wenger, 1998), these glass spiral makers are the core of the communities of practice in bangles making.

Exclusion and inclusion into the communities of practice

How does one get to the core of the communities of practice which themselves form the bulk of the bangle maker's craft consciousness? To understand who can become a *tarvala* and why, regards not only the hierarchy in workers' status but also the struggles of power between sexes, castes and communities on the shop floor. First, women must not participate in the skilled tasks. What Mezzadri (2006) states about gender discrimination in the Indian sweat regimes is also true for Firozabad's glassworking sector. As Sen (1999) noted for Bengal's jute industry, women are primarily discriminated and kept at the bottom of the hierarchy by depriving them of the capacities to perform jobs which are considered skilled. In the factories, women are heavily discriminated against and men prevent them from the acquisition of knowledge. The work activities left to women are considered unskilled and dirty: cleaning the soil and waste sorting. The women I interviewed say that men are not willing to do women's jobs because the work is dirty and less skilled, but at the same time the women seemed to share the masculine view that their jobs are less risky, without showing envy or a preference for more hazardous jobs. The main reasons that men give for keeping women from factory employment are lack of stamina, lack of protection from risk, risk of harassment or even violence⁴ in the workplace, the general tradition that women should not to leave their neighbourhood,¹⁸ alongside the male pressures on them to do all domestic work thus restraining them from full-time work, or forcing them, on the contrary, to work all day. Therefore, women are numerous in finishing glass work in the household and in the decorating workshops, but even there, they remain discriminated against and are often confined to tasks considered 'low'.

¹⁸ Which makes harassment in the factories a self-fulfilling prophecy: women who work outside are considered disobedient or are from a very deprived status which makes them targets for harassment, seemingly justifying the injunctions to not work outside, and so on.



Teenage girl joining very small bracelets with a gas flame. Photo: A. Kaba, taken in October 2019.

Second, the communities of practice are often delimited by the boundaries of caste and of religious community: the stakes around skill transmission, especially those of the *tarvalas*, shape the relations and struggles between the Sheeshgarhs and other Muslim castes as well as between Muslims and Hindus. The glass industry is said to have been started by the Muslim Sheeshgarh, and thus its masters even today are the Sheeshgarhs.¹⁹ According to the narratives of the workers, the first bangles factory workforce probably consisted mostly of Sheeshgarhs who were the best craftsmen. They are always presented as the original core of the communities of practice when it comes to bangle making. After them, there came other Muslim workers, and still behind them stood lower-caste Hindus for the lowest jobs. What is certain anyhow is that until today, the Muslims, all castes included, consider themselves the most skilled craftsmen in Firozabad. They are therefore more dominant among the relatively privileged skilled workers, than in the lower, less skilled categories.

The skills appear to have leaked quite early from the Sheeshgarh to other Muslim castes. There is less reluctance to transmit the skills to another Muslim, especially if the knowledge primarily stays within the family and thus the caste. As Chambers (2020) explains in his monograph, the Muslims in Uttar Pradesh, all castes together, have a long tradition of craftsmanship dating from the period of Mughal domination. They are reluctant to openly

¹⁹ Some archival material from the 19th century makes quick and unfortunately vague references to a Hindu glassmaking caste (Kancher) as found also in Syed's PhD thesis (2001 :149). The techniques of bangles making are of course not circumscribed to the Sheeshgarh, but there are bangle makers in Bihar and Maharashtra, where they are Hindus. Some colonial documents suggest that during the 19th century, the Manihar (Sheeshgarh) caste had a Hindu counterpart. This part of the research is a work in progress as I am looking right now into these archives.

discriminate against each other as caste discrimination contradicts Muslim traditions – a factor which also causes Muslim respondents to minimize caste-related antagonism between them. Muslim craftsmen explained to me that knowledge transmission happens primarily via family *habitus*: children grow watching their fathers work near the ovens, when they bring them tea or tools, and get used to their work. Though this intention is primarily reserved for kin members, the socialisation of the child itself, especially in the main Sheeshgarh district of Firozabad, located in the heart of the bangles market where many small production workshops existed before the regulations obliging production with gas, consists of being raised in a family of craftsmen, and coming to the oven every day to visit one's father and uncles and bring them tea and tools. Just as Chambers (*ibid*) underlined the importance of the *mohallah* (neighbourhood) in shaping Muslim craftsmen's cultures, in Firozabad, the *mohallah* is described as the former privileged space where the community of practices develops. This is less true since the closure of so many small family kilns in the centre of Firozabad due to the laws banning coal, but there is not a single Seeshgarh I met in the field who did not have family in the neighboring town of Purdil Nagar, where many wood-fired kilns are still in operation, and who did not go to see his uncles and cousins working as artisans during his childhood. In this sense, every child in Sheeshgarh is a kind of apprentice. The introduction to the techniques to the names of the tools is, according to them, natural, as socialisation takes place to a large extent in the work structures themselves.

There are also Hindu *tarvalas*, but according to the different narratives, they arose for the first time only between the 1960s and 1970s. Salman, a middle-aged supervisor and designer of coloured glass for a bangles factory, living inside the bangles market in the Sheeshgarh Mohallah²⁰, was previously a *tarvala*. He comes from a Sheeshgarh *tarvala* family which performed the work for more than two generations. About knowledge transmission to Hindus, he said that this occurred of course in the families, but sometimes also outside of the communities, by friendship, '*prem se*' (with love), informally on the shop floor, between 'people who sit together'. He said that *tarvalas* need helpers, and though they can only form one trusted apprentice which can either be from the caste or also a friend from another community every three years, they do not have that much interest in retaining knowledge because although teaching causes knowledge to leak from one's family, a skilled helper can relieve them from the harshness of work. Here, the community of practices is stretched between

²⁰ Sheeshgarh Mohallah is a colloquial expression for this area in which many Sheeshgarh live, but it does not exist as such in a map.

castes and religious communities on the shop floor and the integration is said to pass by the link of comradery, helped by the links of conviviality built at work. The workers spend their time ‘eating together, sitting together’, reminiscent of Christian Strümpell’s term used when witnessing the strong conviviality dynamics between workers from different ethnicities in a Dam project near Rourkhela (Strümpell 2008). I had observed comparable dynamics, though to a lesser degree, in the flyover construction yards in Madhya Pradesh, during fieldwork for my PhD thesis (Kaba 2018).

However, the picture of Hindu-Muslim relations can be much more nuanced. Alim Bhai is a Sheeshgarh master craftsman from a family which settled in the (now terminated) wood-fire-oven²¹ craftsmanship area of Firozabad around 70 to 80 years ago. He did all kinds of glass-related work, starting 18 years ago with the wood-powered oven with his father and grandfather, after that working as a *tarvala* waged worker in a factory after the collapse of their family business, and at last, after a placement in a technical institute in Ahmedabad, turning again to become an independent craftsman, along with his two sons. His trajectory is typical of the hybridization between craftsmen and industrial labour worlds that I want to highlight in this paper. Alim Bhai recalled in front of me the names of the Hindu *tarvalas* to whom he had transmitted knowledge because he trusted them regardless of their communitarian identity. In another interview, done at an ironsmith’s shop in old Firozabad where Alim was bringing a burner for repair, without my Hindu assistant Gowda being present, Alim Bhai declared that the Hindus gained skills by giving their wives as prostitutes to the Muslim craftsmen. He repeated rumours which were circulating based on the assumption that the women who leave their neighbourhoods to work in the factories have low sexual morality. At the neighbouring tea stall, some colleagues of Alim joked about these rumours but also agreed with them, with great laughter and mimics.

One of Alim Bhai’s friends, Zarif, a Pathan²² designer whom we met at a nearby park, declared that he did not believe in these tales of sexual intercourse in exchange for skills, but that the Hindu must have surely stolen the knowledge by treachery, by befriending with Muslims who surely did not teach them willingly²³:

Zarif: They joined with us! Like brothers made other brothers! So they kept joining, They were anxious, there was food, there was no employment, so they moved to a new place, [workers were telling them] okay work and you will get a job in the evening, or you will

²¹ Though wood ovens are not banned as such, they are on the watch. And with the end of coal, it is a whole bazaar industry which has anyhow collapsed, with its value chains, according to the Sheeshgarhs’ narratives.

²² An upper (Ashraf) Muslim caste.

²³ Interview conducted the 9th of February 2020 in Firozabad’s old town.

get it after the month, you will get after 15 days! So they kept joining and they kept learning. Even today, in the world you will see, Muslims are good in craftwork everywhere!

Today in Firozabad, our [people] are leaving, and they are still stuck! They have controlled so much, they have governed. The administration was [ours] if you go 1000 years back, so there was Babur, before Babur, there was Genghis Khan, Humayun was there, they all were there. The administration was ours! They [the Hindus] kept putting us out! If you take out any local and see, we are there, they are behind us, and now we are behind and they are ahead. It has turned! They got attached to us, they joined us. They stole from us! They joined with love; they took our work from us! We were not able to understand why they have come to us.

Alim: They came slyly!

Zarif: Now, I don't know what you have come to steal from me. He [the Hindu] was sitting and then stole it! And now he will put his name that he has done this work! That is wrong! He has stolen! They mixed with us and then put the poison! They were living in our city, living between us, they ate and drank with us, they made the brotherhood, they got attached to us as if they were ours! But they were not ours! Like Modi, we made him ours, we made him ours that he will do something for us, he did nothing! He fooled us! And we thought of him as ours! Today he has made us unemployed, made us useless. This is what he has done to us, and is cheating; he is cheating from every side! This is what happened in this too, wherever you go, 10, 50, 100 years back, then you will see one or the other cheating was done and worked. But this thing was ours, is ours and will be ours, and today we are still the craftsmen in it and will be.

Here, Zarif drew a parallel between the way Hindus supposedly took advantage of the Muslims after stealing their techniques, and the way he saw Muslims, in general, as having become marginalised in contemporary India though once they had been rulers during the Mughal period. An oven worker, Asif, similarly concluded that the first Muslim craftsmen who transmitted the skills to Hindus, if willingly, made a foolish choice. However, these bitter discourses have to be understood in the context of the time when they were collected, during winter 2019-2020, while there were demonstrations ongoing against the National Register of Citizens/Citizenship Amendment Act discriminatory laws against Muslims. Zarif's interviews were taken in late January 2020, just after killings by the police in Lucknow but also in Firozabad during the anti-CAA demonstrations,²⁴ and just prior to Delhi's Hindu-Muslim riots. In spite of such reported enmities, many workers shared the opinion that anyone can learn glass skills and that it is impossible to retain knowledge in the family for generations. In this context, referring to lost pride in the Muslim golden age is common among Muslim Indian craftsmen communities (Chambers, 2020).

²⁴ NEWS 18 India, December 20, 2019, <https://www.news18.com/news/india/one-killed-in-firozabad-as-violence-against-citizenship-act-spreads-to-many-cities-in-up-2431215.html>.

Such apparently contradictory positions show the complexity of the stakes of skill transmission, influenced by caste and religious identity. For some people, certain skills should remain in the family, for others in the caste, and for most in the religious community. Some others, even Muslims, would transmit all their skills also to a Hindu if they feel he is trustworthy or if there is a strong friendship bond. But at the end of the day, these attitudes were not at all presented as common, though they existed. There was no general agreement between the workers about skill transmission, though the general tendency was without doubt the idea of retaining knowledge preferably among family and caste members. The craft identity of skilled glassmakers is often absorbed by the communitarian and caste consciousness, but as a social force and common interest it may also pass from one community to another, when the community of practices is extended through the transmission of skills. The craft-related identity then leaks for example from the Sheeshgarh caste to other Muslim castes, which in this way were enabled to assume at least a loose identity as Muslim glassmakers.²⁵ The fact that the Sheeshgarh are primarily bangle makers makes it seem legitimate for other Muslim castes to specialize in other glass domains, making it more likely that other (Muslim) castes can be proficient in other kinds of glasswork.

Old and new craft consciousnesses outside of bangle-making skills

The Muslim community of the Pathans are now very visible as skilled workers, especially as oven masons and as glass sculptors. One large Pathan family which has been active in glass masonry work for at least 60 years and is by now well on the way to becoming part of the lower middle class, has by now split into two specialized branches, led by the Ustads (masters) Alim Ustad and Nabil Ullah, famous in all Firozabad for being the only masters able to repair the big industrial regenerative furnaces. Another famous extended Pathan family is recognized among the Muslims for being the best and the oldest glassmakers in the city. They live in a labour colony in southern Firozabad. They complained partly that other Muslim families, even Hindus, got into glass sculpturing but also declared with resignation 'you cannot avoid that someone sits close to you and understands what you do.' However, after a long interview, the elder son of the family who had been called to the phone because his other family

²⁵ This is why Zarif is referring to the identity of Muslims as craftsmen. He forgets to say that as a Pathan, he may be considered by many Sheeshgarh as yet not so fit to the work of glassmaking, especially the bangles factory, where he learnt his skills before becoming a specialist of colours, in bangles as well as in glasswork.

members were not able to explain the origin of the family's glass making skills, had to admit that the grandfather who founded the lineage of skills, had been taught by Muslims but also by a Hindu master in the neighbouring town of Shikohabad. This shows how even among prestigious families of glassmakers who rely a lot on mobilizing their skill-related identities through the family and religious communities, craft consciousness is more than just the skills or the caste identity, but something primarily linked to the skills transmission which diffuses itself *with the skills* between communities *by the interface of the communities of practice* even though it also remains a trigger of opposition, jealousies and concurrence between religious communities and castes. The community of practices becomes a tool of solidarity, of mobilization and defense of the collective interest around the way of life and the business implied by the craft.

This is particularly visible among the Pathan's competitors: the Kushwahas, a Hindu caste of former cultivators. They declare that they entered glass sculpture work two generations ago. Unlike the Muslim Pathans, their Hindu faith helped them to enter the market of deities' statues but also of animals, and some of them specialized since the 1990s in the making of glass smoking pipes. The Kushwahas I met assert that they learnt their skills from their grandfather, one of the most gifted craftsmen of the family, who claims to have got his skills while traveling in South India. Their *mohallah* (locality) is full of small glass-sculptors' workshops, and a strong solidarity can be noticed between workshop owners and those who can't afford to buy a gas-driven burner machine and thus must pay other craftsmen's sheds to work their glass, for the cost of gas and raw material. Therefore, many of these sheds used to work night and day almost every day.

Kushwaha women, though considered less capable, are also taught glass making skills, but to a lesser extent, blocking them from rising in the hierarchy, as eternal helpers. The Kushwaha's craft consciousness encompasses an ethos of independence, of skills transmission from elders to youngsters, between men and women, accompanied by a consciousness of common interests as a community of craftsmen, recognizable in their network of solidarity which also keeps the knowledge of skills inside the caste, though Kushwahas are not primarily a craftsmen caste. They are Shudras²⁶, hence cultivators, and sometimes vegetable sellers in the markets. This craft consciousness has been absorbed by the caste identity with the caste

²⁶ The lowest of the four orders (Varnas) of castes in the Hindu texts (especially the laws of Manu), whose duties range from farming to craftsmanship.

entering the business. It has leaked from elsewhere,²⁷ and has bloomed inside the caste, to form its new identity and work consciousness.



Ramesh Kushwaha's sister trains on the bench. The men in her family believe that she will never be able to excel like her brother. Photo: A. Kaba, taken in November 2019

²⁷ Some contacts said that it is the grandfather of one of the most gifted Kushwaha's glass sculptors who brought the skills when he was traveling through Chennai. This narrative should not be taken as a real narrative of origins and without scrutiny; bringing back the skills from Chennai while they already are in Firozabad, at least partly, seems strange. My interpretation would be that they needed to make some sort of story of origins which imitated that of the Sheeshgarh and Rustam Ustad.

3. Exploitation, independence and contextual class struggles

Exploitation in glass works

One need not romanticize the ‘craft consciousness’ of Firozabad’s skilled workers, but put them in perspective with the exploitative conditions of work which prevail, especially in the factories, as well as in the urban decoration workshops. Though possession of skills is the grounds for struggle for explaining hierarchies, opposition between communities and the development of relations of power within the city’s working classes, the practice of wage-work itself, whatever the level of skills involved and the hierarchical position, gives no pleasure when it is done inside the factories and manufacturing units. The work is clearly described by the factory workers as alienating, with little meaning in work in the Durkheimian (1933) sense of the social and metaphysical sense of accomplishment achieved in labour. Though it may seem obvious given that the informal sector has a reputation for heavy exploitation, this was not the case here since in my PhD fieldwork (Kaba; 2014, 2018), the metalworkers who were from less favoured labour classes than those in Firozabad were sometimes very proud of their job and often claimed to love it, even if they were conscious of the exploitative and precarious side. In the whole of my fieldwork, I met one worker who told me that he did like his job, all the others did not.

Even *Tarvalas* never omitted to point out the harshness of their work while they explained their mobility. As explains Karim, a young *Tarvala* I met in a Muslim owned company: ‘How I learnt the job: look!’ – showing me his terribly burnt hands – ‘Look, this is my *ustad* (pointing to the master), he taught me everything.’ Showing a colleague’s hands, he said,

‘But see his hands! This is also how we learnt ... Of course, I am skilled (*hunar*), this *palatvala*; also, you see him he needed one year of learning to shape the glass ball properly. Still, this is bad conditions, tenuous work (*mehnat*). I have two sisters to marry off, so I have to pay the dowry, this is why I am working, if not why do this? During the summer, when it is 60 degrees, your stomach hurts, you cannot even have a proper lunch, if not you won’t feel well.’

Firozabad is, indeed, famous for the exploitation of workers and it is no mystery that the majority of the papers published concerning the area are regarding medical expertise and activist research pointing to the terrible working conditions, the risks of silicosis and wounds

inflicted by the work in glass industries (Rastogi et. al., 2011) as well as the resilience of child labour (Chandra, 2009). Syed, a glass worker tells me that the child labour ban laws had some efficiency over time, and that children's work is concentrated in the domestic houses – it occurs in every household – and in finishing workshops. But Zarif also explained to me that 'the tea that the owners give to the visitor is the occasion to evacuate the children.' One Baniya owner even openly asked me not to take pictures of the children – so that they finally managed to evacuate. I was even thrown out of an export factory because I looked at my phone when kids were eating in the neighbouring room and the supervisors thought that I was collecting evidence for European NGOs!

The everyday harshness appeared more in informal discussions during the fieldwork. All these discussions overlapped at some points, conveying that the work is hard, that the conditions of workers and risks are unbearable, that exploitation (*shoshan*) is rampant, that the work is done by obligation and helplessness (*majburi se*) because there is no other choice than working in the glass industry, and that because of illiteracy the workers are dependent on the only industry that exists in the region: 'We work here, we die here, there is no other choice, no other line where to find work' was a sentence repeated again and again with only small variations which highlight these chains between the people of Firozabad, the glass industry and the capital holders possessing the means of production.

Besides the enmities between communities, confronting risk and harshness undoubtedly triggers amongst all the workers the consciousness of a common condition of exploitation. Therefore, amongst all the fragmentations within Firozabad's classes of labour, reproduced by the intermediaries of labour who are the elite and sometimes the wardens of these industrial worlds, there is still the common experience of the burnt hand which puts the intermediary body of the skill-bearers on the side of the labour classes and separates them strongly from the owners of capital and from the few educated, white-collar workers. The Alim Ustad and Nabil Ullah families, being expert families in oven repairing, declared '*we are struggling every day with our lives, it is still labour work*' or '*we have the skills and can make good money even though it's manual and precarious labour (majduri)*'. Their declaration is a good way to represent the double-faced vision of the work that has been present all along the fieldwork: all the workers agree that in Firozabad's factories and manufacturing units, there is a huge problem with the forms of labour, not only because it is hybrid but because it is highly exploitative and too dangerous.

Difficult resistances

There are collective resistances involving workers at all the skill levels. There are 8 to 10 unions in Firozabad but some of them are reportedly ‘fake’, in other words set up by the factory owners in order to simulate unions. The recognized unions are the Centre of Indian Trade Unions (Communist Party - Marxist) affiliated²⁸ Kaanch Udyog Krantikari Mazdoor Sangh formed in 2003; the Indian National Trade Union Congress (Congress-affiliated), funded in 1981; and a Bharatiya Mazdoor Sangh (BJP affiliated) union. There is also an independent union, registered in 2020, led by Shivam Manav, a Dalit home worker, and specialised in defending the interests of the home workers who finish the bangles. Manav insists on the fact that there is child labour in his own house and is very active in social networks, contrary to the older leaders from Center of Indian Trade Unions and the Indian National Trade Union Congress. His attempt is not the first one to unionize the households and numerous independent movements have existed over at least the last 20 years concerning housework. The fact that the industrial union takes almost no care of this housework – the most exploitative being in terms of child labour – shows how the struggles are segmented according to the systems of production.

Despite these facts, collective solidarities do happen at least to be put in motion successfully and Firozabad also has a strong history of social struggles. The first strike records I found in the archives are from 1939.²⁹ From the beginning, even in union struggles, class does not always trump craft consciousness; the union’s oral history shows that they are articulated together.³⁰ Like the engineers among the early 19th century British manufacturers (Thompson, 1963), *tarvalas* were probably, as well-off workers, the most active politically, with an early unionization which was described by the people we interviewed as strongly shaped by these groups of workers. Rustam Ustad’s grandson told us that his ancestor was not

²⁸ In India, unions are often affiliated to national organisations (here the CITU) themselves affiliated to political parties, here the Communist Party of India – Marxist (there are two main communist parties, the Communist Party of India and the Communist Party of India-Marxist).

²⁹ In a 1939 article from the Times of India, it is said that unrest is going on in Firozabad, simultaneously with a strike in the neighbouring city of Cawnpore. The article states that in the glass industries of Firozabad, there was a 34 days lockdown starting August 25th and involving 10,000 men in a union that was soberly named ‘mazdoor Sabha’ (literally ‘labour Union’. Ref; The Times of India (1861-current); Oct 6, 1939; ProQuest Historical Newspapers: The Times of India p. 10.

³⁰ Denis Segrestin who wrote about unionists in the 1960s and 1970s in France, also works on the articulation of ‘job consciousness’ and class in the Confédération Générale du Travail, a communist union. He uses extensively the example of glassworkers who combine in their struggles class with job identities (as a sectoral collective of glassworkers). Interestingly, he says that this identity remains very strong in automated lines where the skills are vanishing (Segrestin 1975).

only a master craftsman and the inventor of the *tarvala* technique but also one of the founders of a union whose political activities, as he described it, were related to knowledge transmission:

‘Rustom Sir was the labour union president so whatever knowledge he had he forwarded it to the labourers as well, the wiring techniques all were taught by Rustom sir and he was even down to earth as he helped a lot.’

But when we questioned unionists about the history of past unions, the one they remember the most is the Tarkash union, founded in 1978-1979. According to NayanSingh Yadav, the vice-secretary of the CITU-affiliated Kaanch Udyog Krantikari Mazdoor Sangh, it was a sectorial union, mostly set up by *tarvalas*. He said:

‘[The founder] Bhagwan Das Sathi! He was a lawyer from Hatras, he did the registration and under the eyes of Subhas Yadav, there were all the members of the factory who used to work that time, so they also stopped at that time! So, he [Bhagwan Das Sathi] stayed on the side of the labour and he used to practice law. And here the labourers who used to put the wires [hence *tarvalas*] assembled in the Tarkash, in that they were the same people, there were 10-20 people. The board was then formed and registered by Bhagwan Das Sathi. And in his guidance, the Tarkas Union started to work and 11-12 hours of work used to happen, 14 hours, it was reduced and brought to 8 hours. And in that time, laborers got a very big relief. The working time was set, they started to get a bonus, and they started to become permanent. When there was a reduction they used to get reimbursement, and in the factory, they used to get an identity card, they also get a bonus.’

The union was affiliated to the Indian National Trade Union Congress. The movement started with the factory’s elite workers, but did not stay sectorial; they worked for the interest of everyone for the reduction of working hours. Other narratives of unionists specify that the union was mixed involving Hindus and Muslims. Abid Bhai, an ex-CITU unionist, declared in a recent interview (21/02/2021) that there was a predominance of Muslim *tarvalas* but not as many Hindus and when lower-skilled workers started to join the union, the composition became even more mixed and interreligious because of the links of solidarities and trust built on the shop floor and through the struggle. Caution needs to be taken when analysing an event that only exists within memories but it seems likely that craft and class consciousness were deeply interwoven for these people. Another important element is the violence associated with the struggle’s retaliation by the owners which terminated the union thanks to physical threat. Some years later, in 1983 most of the elder workers and all unionists remember the struggle led by Raja Ram, a CITU leader who was beaten and killed by the owner’s goons. After this murder, oral narratives do not recall much union activity until 1997. At that time, another important strike occurred in the cottage industries: Shivam Manav and some colleagues led a strike with another independent union for three months on the issue of work within the households, the Hindu Maha Kisan Sabha, but according to his own assessment, the struggle

was quite a failure and the financial loss was huge for the cottage workers. In 2004, Mukesh Yadav, ex-CITU leader began a strike after the reformation of the union in 2003. He was jailed and, according to his uncle Nayan Singh Yadav, movements from all the unionized workers were important to free him, and the strikes lasted for two weeks. He died in 2009, and I heard rumours of his assassination, although they were frankly denied by his uncle who told us that he just had a motorbike accident.

Ram Das Manav came back to unionising in 2018 and led another strike with the cottage industry workers which sent him to jail. Despite their daily concurrence,³¹ all the union secretaries expressed solidarity for his release. Interestingly, in the YouTube videos which show the demonstrations in front of the police station for his release, it is women, normally totally invisibilized, who were at the front. In April 2020, all the unions except the Bharatiya Mazdoor Sangh planned for direct action after the recent repelling of almost all the labour laws by the local Chief Minister Yogi Adityanath on the pretext of relaunching the economy after the COVID-19 lockdown. However, actions except the usual petitions to the Labour Commissioner and the Uttar Pradesh state authorities were made impossible by the lockdown situation and thus, all the online reports from the field stressed a lengthening of working hours, a scarcity of unemployment and arbitrary dismissals. To add another form of pressure, the bangles finishing machine, introduced just after the lockdown, has been threatening the livelihoods of all the households dependent on bangle work. Of course, this triggered another attempted struggle by Shivam Manav, backed by the Samajwadi party; for now there have only been YouTube protests and letters to the Labour Commissioner.

Nevertheless overall, unionists and workers agree there have been few real victories if any. What comes out of the numerous narratives of Firozabad's working conditions, is a general estimation that child labour has clearly declined in the factories (but not in the cottage industry), and that the progress (such as the introduction of fans after the 1960s) was compensated by intensification of rhythms. The fight for the reduction of working hours is the one which arises most often in the factory workers' unions' claims, but the narratives seem to highlight a never-ending story of relative victories after the few strikes, which lead to intimidation or corruption of leaders, and then a recoil to the previous scenario. While Raja Ram who was murdered is celebrated as a hero in collective memories, leaders who agreed to collude with the management are said to be numerous, and among the non-unionized workers whom we interviewed, there is at best a feeling of uselessness of the unions, given the costs in

money and time³² to produce results which are generally mediocre, and at worst there is distrust in the leaders who are often believed to work for their own career, or to take commissions by owners, or both. As in the context of the formal sector (Ramaswamy, 1983) these unionists are for the large part social workers or sons of politicians, all from the lower or upper middle class. The only one who works as a bangle-maker is Shivam Manav, but he also held a Samajwadi ticket and got a municipal counsellor mandate. This distance certainly does not help the workers' adhesion, which triggers a vicious circle according to the unionists: the less support a leader has, the more likely he is to be intimidated by the owners, or be forced into accepting compromise, which will further jeopardize his credibility and so on.

Quests of independence

The relative failure of union struggle against industrialist interests also explains this strong presence of the craft consciousness, and notably of the independence *ethos* typical of the craftsmen communities in India (Heuzé, 2013); if there are few hopes of better working conditions, it is better to remain one's own master. Alim Bhai did so and now has a flourishing beads and small glass items production petty business. His distant cousin, Munna, has trying for a year to open in the central market a wooden oven, made with the traditional plan. While I witnessed the building of the oven, his project has been on hold for a year due to the shortage of skilled artisans from his caste who would be willing to work in Firozabad. If since the ban of coal in the old town setting one's oven has become extremely difficult, possible free activities remain: torch glass sculpting or designing/consulting for factories, for example. The craftsmanship is pictured as giving better conditions of work and more freedom: it is described as more comfortable '*aram se*' and so not requiring as much effort: '*isme itni mehnat nahi hai*'. Even if some glass sculptors insisted that it can be even hotter in the houses in summer than in the factory, in most discourses as well as in observed objective conditions, there is no comparison between the risk and harshness of the factory work and the one of craftsmanship. But, of course, one needs to have the required small amount of capital, the skills, and the commercial network to set up an activity.

Attempts to gain independence through craftsmanship are also jeopardized by the dependence linked with the owners of commercial capital, often from the same community as the industrialists, the Baniya merchant castes, mainly the Guptas and the Agarwals. The

craftsmen exchange tips and share networks within their own communities, the most remarkable being the use of WhatsApp, to try to short circuit the vernacular networks of trading. It is extraordinarily strong among the younger Kushwahas involved in cannabis pipes and bong production who use networks of exporters via WhatsApp. Kuwa, the Kushwaha renowned as the best of the *mohallah* (locality), has been trying to build new networks with designers from Delhi, while Shiva, another young Kushwaha specialized in big Ganesh statues would like to make his own registered brand. Alim Bhai commented to me how he could travel to Bangalore to develop new networks and how he used the internet to see how much profit margin his wholesaler made on his labour when he sold his products in the US.

In this sense, both class and craft consciousness are often mobilizing craftsmen and workers in struggles which basically aim at the same community; even if there are Muslims, other Hindu caste factory and shop owners, the Baniya castes dominate both the capital-driven spheres. This situation often causes complaints by the craftsmen, especially the Sheeshgarh who see themselves as the inventors of the industry who were deprived by the Baniyas. It is difficult to check at which point this claim is true: following the Seeshgarh's narratives, there were numerous *kharkhanedars* – small and bigger owners – from the Sheeshgarh caste, ex-craftsmen who made their own factories, and many *chal bhattis* – small wooden ovens that could act as a secondary means of production, even in families whose members partly worked at the factory. It was, according to them, the ban of coal in 1996, which destroyed many Muslim and Sheeshgarh Kharhanedar's businesses.³³ Though what matters for this paper is the narrative itself, it seems important to put it into perspective with the written sources and convey their limits. The elements I found in the archives stress that the Baniyas (who are called 'Hindu merchant castes' by the British) are from the beginning central to capital and to the ownership of factory. But as Haynes (2012) states, the colonial archives are often more concerned about the capital-extensive Hindu mercantile factories, and have a tendency to characterize the position of craftsmen as 'independent, petty workers', often victims of the capitalists – probably because they presented themselves this way. Therefore, these sources often minimize the importance of craftsmen capitalists.

³³ In addition to these oral sources, Sehti and Gosh's book (2008) is a precious account about this time because their action research was an operation of technology transfer, from Europe and India, to Firozabad, in order to help the small industrialists to build gas furnaces under the threat of closure. Therefore, this book is also another account of technology transfer from Europe to Firozabad, in more recent times than the beginning of the industry.

The complaints against the Baniya – regarding their monopoly over commercial and industrial capital – also persist in non-Sheeshgarh craftsmen communities. Be it among Kushwahas or Pathan sculptors, there are never-ending complaints about how the mostly Baniya wholesalers master the market and impose prices, but also forms of labour: they impose the designs that ‘sell’, according to them. This is sometimes recognized by the Baniyas themselves who are noticeably clear on how the town’s supposed skills for a certain occupation are naturalised and essentialized following communitarian identities. For example, a young Baniya designer and businessman, when asked why the Muslims lost ground in commercial as well as industrial capital to the advantage of the Baniyas, replied simply:

‘In the beginning, it was Muslims who were in the business, now also there are Muslims in the business, but many of them are *kaarigars* (artisans) but the owners are maximum Hindus. Muslims could not stick to the commitment and the quality, they could not maintain the standard and quality of the bangles and also, they could not deliver on time, customers got distracted because of the behaviour and slowly they came for the others. Earlier, it was maximum Muslims who ran the business, and now 98% of the big firms in Firozabad are run by Hindus. Cut work, skill work, Meena work, *zari* work are still done by 98% Muslim workers, they are only the workers not the owners... For the cutting you will find Muslim workers, they are expert in details. This is genetic for Muslims.’

Of course, things are not always that simple, more work must be done concerning the exploitation and predation practices inside these communities. Baniyas are not the only detainers of industrial and commercial capital;³⁴ some of the (upper) Hindu castes and Muslims are also involved in it. Muslim factory owners and wholesalers are also reportedly very skilled in exploiting their caste and religious fellows even in some Sheeshgar’s words. These points add complexity to the situation and show that if craft consciousness is often absorbed by the castes or community struggles, it never exactly equals the communitarian or caste identity itself. It is what mobilizes their struggles against the bonds that link them to local capital.

Concluding remarks

To sum up, the fascinating faces of Firozabad’s worlds of glass are embodied in two main aspects: the presence of fine skills and acute exploitation. This shapes a double-edged ethos in the worker’s subjectivities, valorizing one’s skills often kept inside one’s kin and the

³⁴ But they are clearly majoritarian. For example, in the board of the UP Glass Manufacturers Association, which represents the interests of the region’s glass industrials, there are only Baniya directors. See for example the syndicate records here: https://www.chemarc.com/companies/company_detail/the-up-glass-manufacturers-syndicate/U26106UP1951NPL002331.

community while acknowledging the conditions of exploitation. This situation is explained by the specific economic and technical context of this glass cluster which has been determined by a certain relation between workers and a lowly automatized technology, local capital which proceeded by taking ground in local craftsmanship, and on limited transnational exchanges of skills and technology in a context of global competition with the European glass production centers. This context allowed communities of practice based on glassmaking skills and in particular on the wire making for the bangles industry to bloom. These communities of practices were, according to the Sheeshgarh craftsmen, developed from the Sheeshgarh and extended to other Muslim communities and then to the Hindus. Narratives from other communities as well as more balanced statements by some of the Sheeshgarh along with cross-checking with the archives suggest that the real history is probably more complex. Sheeshgarhs have never been the only bearers of glass crafts in India, and the skills of industrialised bangle production come at least partly from foreign experts. The polarization between Muslim craftsmen and Baniya industrialists is only true to a certain extent – other Hindu castes but also Muslim entrepreneurs are in the trading and industrial business and there are Hindu glass craftsmen too.

However, I argue that this narrative from the Sheeshgarh is extremely illuminating, to understand how craft consciousness – a social force defending the glassmaker's interests – has developed on the bulk of these communities of knowledge be it by its reference to the golden age of Muslim craftsmen, by the negation of colonial input in the oral stories of Rustam Ustad, and by the ethos of independence and the struggles to regain it. This craft consciousness manifests itself not only in the strong glassmaking identities, in the pride and respect still devoted to the *tarvalas*, but in its potential to build solidarities and merging the struggles of skilled glass masters to keep their status, their autonomy, and to a certain extent the control of their crafts and of the means of production – even if the latter attempts have seen limited success in Firozabad. If the Sheeshgarh craftsmen are no longer numerous in Firozabad following environmental regulations, they are still overwhelming in the neighboring town of Purdil Nagar, where they mobilize as craftsmen in the same struggles for freedom against merchants.

Communities of practices historically extended from Muslim to Hindu glassworkers, and so did the craft consciousness, for example with the Kushwaha glass sculptors, who have a quite recent introduction into glassmaking and still have their glass craft consciousness, defending together their skills and autonomy. As far as it concerns the bangles industry, this spread of the communities of practices and craft consciousness between communities has been

done on the shop floor, through links of camaraderie, friendship and trust. It made the community of practice trans-communitarian regarding caste and religion, though only to a certain extent: as Chambers already noted (2019), the conviviality between Muslims and Hindus in such clusters can be extremely instrumental – and I have shown how much different people, sometimes the same people in different contexts or at different times, could accept or condemn the trans-communitarian transmission of skills in such contexts of factory friendship. Still, craft consciousness, in the factories, has combined with class struggle, as witnessed in the formation of the Tarkash union, first concerned with the most skilled workers' interests, then trying to a certain extent to defend all the workers' interests.

Therefore, it is the relationship with capital and technology which provides the context for the development of communities of practice and craft consciousness, but as social forces, craft consciousness lie alongside class struggles within the engine of the glassworker's agency concerning their relation to capital. As Firozabad's existence was determined from the beginning by global concurrence between glass production centers, and continues in the same vein. In parallel with the domestic sale of bangle production, Firozabad is now exporting many decoration items through the commercial hub of Moradabad, for example in France and Germany where the glassworkers I am studying are facing increasing job losses due to the concurrence of Southern workers and the machine. China's concurrence is everywhere but thanks to bangle production, Firozabad is resisting and shyly but steadily projecting itself globally. The French artist Jean-Michel Othoniel has for instance made his wall of glass bricks in Firozabad³⁵ and an exporter from Moradabad told me with delight in February 2020 how he used to send the products of Firozabad to France, in middle-class retail chains like Maisons du Monde, while he also signs prestigious collaborations with Louis Vuitton. Beyond Firozabad and India, studying the craft consciousness of glass workers and its relation to capital is also a study of how neoliberalism is putting different communities of craftsmen and labor classes in

³⁵ Othoniel says in the Hindu: 'While everywhere the glass industry is collapsing, it is thriving here. In Firozabad, every single family is employed in this trade but nobody is without work. People are not rich but comfortable and humble. It's the glass bangles that have kept the glass industry going here. Everywhere else China has entered the picture, learnt the glass craft and ruined the indigenous industry but they haven't been able to do so here because you have a very special product called bangles, which every woman wears. Also, I saw no child working in the glass factory. I saw many children, who were earlier working in the factory, going to school. I was really impressed.' I share with Othoniel the analysis regarding Firozabad's competitiveness but not concerning the naivety expressed regarding children's work. Children are not working inside the hot shops anymore, but are still numerous in the cold shop operations, not to mention housework. Reference : The Hindu, 27.08/2010, URL: https://www.thehindu.com/features/friday-review/art/The-glass-wall/article16147103.ece?fbclid=IwAR1KfdpIQgdhOOqv8ENt67DAepKwUYEi3II96es_FwdZL5Re59wHzRS9B_U

ruthless concurrence with one another, and thus perpetuating acute forms of exploitation. While the hands of Firozabadis are now linked with the most famous global designers and artists' works, their remain poorly-paid, anonymous hands, at times including the hands of children.

Bibliography

Breman, J., 2013, *At Work in the Informal Economy of India: A Perspective from the Bottom Up*, Delhi, Oxford University Press.

Breman, J., 1996, *Footloose Labour*, Delhi, Oxford University press.

Brouwer, J., 1995, *The Makers of the World, Caste, Craft and Mind of South Indian Artisans*, Oxford University Press, Delhi.

Bourdieu, P., 1984, Ethos, habitus, hexis, extrait de le marché linguistique, *Questions de sociologie*, les Editions de minuit, Paris, p. 133-136.

Chambers T., 2020, *Network, Labour and Migration among Indian Muslims Artisans*. UCL Press.

Chandra, A., 2009, Child Labor-A Study from Anthropological Perspective With Special Reference to Glass Industry, Firozabad. *The Anthropologist*, 11(1), pp. 15–20.

Chambers, T., 2020, *Network, Labour and Migration among Indian Muslims Artisans*, London, UCL Press.

Chambers T, 2019, "Performed Conviviality": Space, Bordering & Silence in the City', *Modern Asian Studies* 53 (3).

Chaudhuri, M., 1933, THE TECHNIQUE or GLASS MAKING IN INDIA (1400-1300 AD.). *Indian journal of history of science*, 18(2), 206-219.

Haynes, D. E., 2012, *Small town capitalism in Western India: artisans, merchants, and the making of the informal economy, 1870-1960* (Vol. 20). Cambridge University Press.

Heuzé, D.G., 2011, Nishad in Mahias, M. C. (éd.), *Construire les savoirs dans l'action. Apprentissages et enjeux sociaux en Asie du Sud*, Paris, Éditions de l'EHESS, Coll. Puruṣārtha, 29.

Heuzé, D. G., 2013, Une communauté indienne face au travail : les nisads du Gange. *Sociologie du travail*, 55 (4), pp. 513-529.

Joshi, C., 2002, On “de-industrialization” and the crisis of male identities. *International Review of Social History*, 47 (S10), 159–175.

Kaba, A., 2018, Les maîtres du fer : des ouvriers métallurgistes de Bhopal et de leur confrontation avec l'incertitude. *Anthropologie sociale et ethnologie*. École des Hautes Études en Sciences Sociales.

Kaba, A., 2014. « Une culture du précarité ? Devenir ouvrier journalier en Inde. », *Autrepart* 3/2014 (N° 71), p. 157-173.

Kumar, N., 1988, *The Artisans of Banaras : Popular Culture and Identity. 1880-1986*, Delhi, Orient Longman.

Mahias, M. C. (éd.), 2011, Construire les savoirs dans l'action. Apprentissages et enjeux sociaux en Asie du Sud ? Paris, Éditions de l'Éditions de l'EHESS, Coll. « Puruṣārtha, 29, 293 p.

Mahias, M. C., 2006. « Savoir ou faire en Inde », in D'ONOFRIO Salvatore, JOULIAN Frédéric (éd), 2006. Dire le savoir-faire. Gestes, techniques, objets, Paris, L'Herne.

d'anthropologie des techniques, (28).

Pathak, V., Sharma, A., Tiwari, M. K., & Pathak, P., 2001, Present Health Hazard in Glass Industries at Firozabad, UP, India. *Asian Journal of Chemistry*, 13(3), 1269.

Ramaswamy, U., 1983), *Work, Union, and Community: Industrial Man in South India*. Oxford University Press, USA.

Ruthven, O., 2006, Metal and Morals in Moradabad : Perspective on Ethics in the Workplace Across a Global Supply Chain, Thèse de doctorat, Oxford, Oxford University.

Segrestin D. ? 1975 Du syndicalisme de métier au syndicalisme de classe : pour une sociologie de la CGT. In: *Sociologie du travail*, 17^e année n°2, pp. 152-173.

Sethi, G., Gosh, A.M., 2008 (éd), Towards Cleaner Technologies: a process story in the Firozabad glass, Delhi, The Energy and Resource Institute.

Sankalia, H. D., 1947, The Antiquity of Glass Bangles in India. *Bulletin of the Deccan College Research Institute*, 8, 252-259.

Sant, S. K., Ahsan, A., Jaiswal, K., Kumar, S., Ang, H., & Singh, A. K., 2014, A Study on adverse effect of smoke/flue on lung functions of glass factory workers of Firozabad District, *Indian Journal of Community Health*, 26(1).

Subramanian, D., 2008, Occupational Mobility and Internal Labour Markets: Public Sector Workers' Struggles in Bangalore (c. 1960–1980). *International Review of Social History*, 53(3), 425-457.

Syed, I. M., 2011, Child Labour and the New Legislation; A Study of Home Based Bangle Industries of Firozabad UP, Doctoral dissertation, Aligarh Muslim University.

Tastevin, Y. P., 2012 “Autorickshaw (1948- 2...). A success story, *Techniques & Culture*, 58, pp. 264-277.

Tastevin, Y. P., 2015, The Indian Auto Rickshaw in Egypt: An Ethnography of Transnational Trade Connections , *Articulo - Journal of Urban Research*, (En ligne), URL : <http://articulo.revues.org/2872> ; DOI : 10.4000/articulo.2872.

Tastevin, Y. P., 2017, Des chars à bœufs aux plateformes mobiles de forage, *Techniques & Culture*, N° 67, pp. 196-211.

Thompson, E. P., 1963, *The Making of the English Working Class*, New York, Vintage.

Wenger, E., 1998, Communities of practice: Learning as a social system. *Systems thinker*, 9(5), 2-3.

LATEST TITLES IN THE CSH-IFP WORKING PAPERS

Can Landscape Empower Rural “Minorities” Through Tourism? Eco-Ethnicity in the Highlands of India, Nepal, China, Laos and Vietnam. Frédéric Landy, Raghubir Chand, Steve Dery, Pierre Dérioz, Olivier Ducourtieux, Nadège Garambois, Evelyne Gauché, Marie-Anne Germaine, Mauve Letang, Isabelle Sacareau, 2020 (WP no. 17)
<https://hal.archives-ouvertes.fr/hal-02924373>

Spaces of Intermediation and Political Participation: A Study of Kusumpur Pahadi Redevelopment Project 2019. Field-Work Grant, IAPI -2019, Naomi Prachi Hazarika, 2020 (WP no. 16)
<https://hal.archives-ouvertes.fr/hal-02882022/>

Debates on Muslim Caste in North India and Pakistan: from colonial ethnography to pasmanda mobilization, Julien Levesque, 2020 (WP no. 15)
<https://hal.archives-ouvertes.fr/hal-02697381>

Inequality of Opportunity in Indian Society - Arnaud Lefranc, Tista Kundu, 2020 (WP no. 14)
<https://hal.archives-ouvertes.fr/hal-02539364>

Evaluating Education Systems - Nicolas Gravel, Edward Levavasseur and Patrick Moyes, 2019 (WP no. 13)
<https://hal.archives-ouvertes.fr/hal-02291128>

Is the preference of the majority representative? - Mihir Bhattacharya and Nicolas Gravel, 2019 (WP no. 12)
<https://hal.archives-ouvertes.fr/hal-02281251>

Vertical governance and corruption in urban India: The spatial segmentation of public food distribution - Frédéric Landy with the collaboration of Thomas François, Donatienne Ruby, Peeyush Sekhsaria, 2018 (WP no. 11)
<https://hal.archives-ouvertes.fr/hal-01830636>

Contribution To A Public Good Under Subjective Uncertainty. - Anwesha Banerjee, Nicolas Gravel, 2019 (WP no. 10)
<https://halshs.archives-ouvertes.fr/halshs-01734745>



Institut Français de Pondichéry
Pondicherry



Centre de Sciences Humaines
New Delhi