

RELIGIOUS TRADITIONS OF ANCIENT IRON AND STEEL CRAFTSMEN OF INDIA AND JAPAN

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The ethnic groups of India practising traditional iron smelting and smithy craft have been worshipping Asūra, Bhairavo as their God and perform pūjā (worship) before starting their furnace since time immemorial. They, especially *Asūra Muṇḍā* and *Gadoliyā lohār* have kept their tradition alive in the form of *Asūra kāhāni* and folklores. Their traditional God is Mahādevo (Śiva) and Asūra epithets Mahākāl, Bhairavo, Rudra and Kalbhairavo whom they worship according to the Tantric cult. A similar religious worship of 'Sambo Kojin' during the 'Fuigo Matsuri' festival has been kept alive by the sword-smiths and ancient iron-smelters of Japan where the iron technology has reached in 2nd -3rd c. BC by migration through Korea and China.

The Buddhist literature of Japan mentions worship of 'Sambo Kojin' as Demon God, O-Shira Sama or A-Shu-ra and O-Shira which seem to be of Indian origin. The paper discusses the salient features of the ancient wall-hangings of 'Sambo Kojin' and compares his iconographic features with Kālhairavo. The similarity between the two deities and their religious rituals is a vital proof of the independent beginning of Indian iron technology and its migration (outward) to the East Asian countries especially to Japan.

Key words: Asūra Kāhāni, Fuigo Matsuri, Kālhairavo, Mahādevo, Mahākāl, Rudra, O-Shira Sama, O-Shura, Sambo Kojin, Tātāra furnace, and Tenbin Fuigo.

Indian subcontinent has been already accepted as one of the ancient citadels of civilization and trade. The archaeological finding of Harappa and Saraswati cultural sites have provided ample proof of excellence in architecture, town planning, irrigation, agriculture, maritime trade as well as metal production

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and its fabrication. Ancient Indians have paid equal importance to the progress of human values, social culture and religion evolving integrated life style recognised as Hindu philosophy, which is an exotic blend of myth, religion and cast or profession (*karma*).

As described in the hymns of Vedas and other ancient scriptures, Aryans and Dravidians had a well developed cast system to manage the duties of daily life. These casts were *karma*-based and people of the group were expected to perform specific duties throughout their life. They all were followers of Hindu religion but they also had deities of their trade whom they worshipped and offered special prayer for the success of their trade. Their belief in *karma* and religious rituals has been so deep rooted that they have continued these traditions where ever they have gone or migrated for trade or permanent settlement.

The ethnic groups practicing ancient iron-smelting, steel-making and black-smithy called themselves Asūra and worshipped Asūra God Mahākāl and Bhairavo as their family deity whom they offered prayer before starting their furnace. Recently a similar ritualistic worship of 'Sambo Kojin' as 'Fuigo Matsuri' (God of air-blower) by the ancient Japanese iron smelters and sword smiths has come to light. The iconographic feature of 'Sambo Kojin' has great resemblance to the Indian idol of Śiva. The paper reviews the religious traditions of ancient Indian iron-makers viz. Asūra Muṇḍā and the ancient iron-makers of Japan, and examines the possible migration of Indian ferrous craftsmen to Japan and other East Asian countries to establish their craft in these places.

BEGINNING OF IRON CULTURE IN INDIAN SUBCONTINENT

According to the literary evidence iron making had its beginning during the Vedic period. The *Yajurveda*¹ describes the genesis of man-made Au, Ag, Cu, Sn, Pb, and Fe from *hāvan kuṇḍa*. Prakash² has presented a hypothesis explaining the beginning of iron extraction process from *hāvan kuṇḍa* and its transition to the shaft smelting furnace. This hypothesis has been supported by the study of a variety of iron smelting furnaces found in different parts of India and the abundance of iron ore deposits in the subsoil. The *Ṛgveda*³ has mentioned the knowledge of steel suitable for the manufacture of various implements. This indicates the possibility of metal production being initially a sacred ritual performed by Brāhmins who were probably called *lohāvid*. Later, these processes might have been handed over to other casts who began metal production and fabrication on

commercial scale. Based on the archaeological evidences Tripathi⁴ has suggested the independent discovery and development of ancient iron technology before 2nd millenium BC.

In ancient times these processes were believed to be magic and witch craft possessing supernatural power bestowed by the Asūra deities. Hence the ethnic group associated with iron smelting practice called themselves descendents of *Asūra*. In *R̥gveda* there are ~105 references to Asūra. Leuva⁵ has mentioned *Asūra Muṇḍā* tribe as a non- Aryan tribe living in Sindhu valley, which was pushed by the Aryans to East and South India. The twelve brothers of Asūra and thirteen brothers of Lodha got settled in Asūrgarh , from where they migrated to other parts of the country. While *Asūra Muṇḍā* uprooted trees and cleared forests for making charcoal and producing iron, Lodhā cultivated rice and millet by jhoom cultivation. Asūra traded iron with Lodhā for rice and millet for two to four times the weight of iron. Most probably Lodhās were the *lohārs* who refined iron and practiced black-smithy.

Elvin⁶, Joshi⁷, Agrawal and Kharagwal⁸ and many other historians and archaeologist have mentioned the practice of these iron smelters about performing *pūjā* (religious ritual) and pray to God for the successful operation of iron smelting furnace. In recent years, survey of these ethnic groups viz. *Muṇḍā* and *Birjiyā* of Bihar, *Mundiā* and *Āgāriyā* of Madhya Pradesh and Bastar, *Oraons* of Chota Nagpur, and other subgroups settled in other parts of the country has been conducted by Leuva⁵, Prakash and Igaki⁹ , Sharma¹⁰, Misra et al.¹¹ and Balasubramanian et al.¹². This has proved the ancient iron smelting practice as well as the old religious traditions to be alive even today in Sonbhadra (U.P.), Mandla, Surguja, Jaspur, and Wardruffnagar in Eastern M.P., Bastar district of Chota Nagpur and in many parts of Orissa. The iron smelting tribe of these regions are *Śaivaitis* and they worship Lord Śiva according to the Tantric Cult.

RELIGIOUS BELIEF AND RITUALS OF MUṆḌA ASURA

Leuva⁵ has published in detail the life and religious belief of *Asūra Muṇḍā* of Bihar. As narrated by tribeman Sukhapanie , they have their own tales about the origin of human race, *Rāmāyaṇa* and Hanumān. They worship Sun as their supreme God and they call him ‘Sing Bonga’. They also worship Mahādevo, Mahādāni and Rudra as their religious deity. An account of their religious beliefs, rituals and folk songs as narrated by Sukhapanie and recorded by Leuva⁵ is quoted below:

Asūra Kāhāni 1 (The origin of mankind):

Regarding the beginning of Muṇḍā tribe they narrate that once Lord Mahādevo went on hunting in forest holding a 'Sonā Taṇḍī' (Golden *Trisūl*) accompanied by his assistants and hounds named 'Charna Bhairavo and Lilibhuliyā, who found two human babies a boy and a girl, in a 'Khābrā' (a cave). Lord Mahādevo brought them home in a 'Rūpa Dhonti' (Silver basket) and nourished them as brother and sister. When they became young they were advised by him and Parvati to cohabit and increase their population, which they refused. Ultimately Lord Mahādevo taught them to prepare rice bear (*sūrā*) and asked them to drink. In the intoxicated state they forgot their relation and cohabited. Thus their race increased and their offsprings were called *Asūra Muṇḍā*.

Asūra Kāhāni 2 (The beginning of iron smelting):

In another tale he has narrated that Asūra lived on Dhaulagir and Mainagir hills on which there were two lakes. They were clever artisans, travelled in palanquins and used to eat red hot iron. They did not cultivate land. Once Bhagwan (God) shut all the Asūra in a large fort to save others from their cruelty, but when Bhagwan came out of the fort he found two Asūra (brother and sister) who were left outside the fort (Dhawalgir fort is in existence). Bhagwan forced these two to make iron smelting furnaces and bellows to begin iron smelting. They were left by him in a jungle and condemned to produce iron.

Asūra Kāhāni -3 (The curse of Sing Bonga):

It was long before the dawn of human history, the Earth was yet in infancy. Sing Bonga was seated on the golden throne engaged in conversation with heavenly courtiers. Suddenly they were disturbed by the intolerable heat which had surged in the heavenly atmosphere and the complaint received from the beasts living on Earth. This was caused by the large scale operation of iron making furnaces by Asūra due to which the water tanks and vegetation were drying up. Sing Bonga became angry and sent his courtiers to talk with Asūra but they killed the messengers. They continued to produce iron and said we are Sing Bonga and we refuse to obey orders from others. Ultimately 'Sing Bonga' himself alighted on his golden hawk at Ekasipiri and Terasibidi, the land of eighty uplands and eighty-three elevated rice fields.

He had come there in the disguise of a boy, a field worker covered with itch. He went to Asūra asking them for food and shelter which they refused. Then

he came to a hut at the end of the village where a Muṇḍā couple called Luthkum Haram and Luthkum Baria lived. They gave him shelter and protection. The boy (Sing Bonga) picked up some grains of rice and put them in a basket, which became full of rice (magic). Then he advised the Muṇḍā family to cultivate this rice.

Very soon when the iron ore was finished the Asūra asked the itch covered boy to help them. He asked them to sacrifice a white cock, a white goat, and later a white sheep, but the iron ore did not last long. Then he asked them to make human sacrifice in the iron smelting furnace and when nobody came forward to die the boy offered himself.

The furnace was prepared and when it was red hot the boy climbed inside it. While the furnace was being fired the Asūra brought water in new earthen pot resting the vessel on head on a cushion made of new cloth. At last when the furnace was broken, the boy (Sing Bonga) came out alive loaded with gold and precious stones. Seeing this Asūra asked their women folk to plaster the furnace and fire it once again. This time all the Asūra men went into the furnace and the women operated the bellows, but to their horror instead of fluid slag red hot blood came out from the tap hole. At this 'Sing Bonga' deluded the women that their men were chewing *pān* and *kasauli* (betelnut). When the furnace was cooled the women found only charred bones inside it. They realised that 'Sing Bonga' has made them bring death to their men.

'Sing Bonga' thundered out 'well well', will you obey my orders and they said yes. He advised them thus " in the middle of the village under a tree there shall hence forth dwell a Muṇḍā .He shall be called Pahan, and he shall make sacrifice and offerings for you." When 'Sing Bonga' rose to heaven the Asūra women cling to his garment but he jerked them apart. As they fell on ground they were called Māraṅ Bonga, Māraṅ Buri Bongā, Ikir Bongā, Desuli Bongā and those who fell in the field were called Chaṇḍi Bongā. Ultimately 'Sing Bongā' blessed them and their men became alive.

Asura Kahani-4 (Advice and blessings of Mahadevo):

Once, the Dharmarāja Mahādevo (Śiva) was distressed in heaven by the heat from the furnaces of Asūra. The heat was so intense that his beloved horses Hansrāj and Pankrāj did not get their feed and water. When his messengers could not persuade Asūra to work their furnace at night or only once in a day, he made

all the Asūra men and women enter into the furnace through fraud promising them enormous wealth. Thus all the Asūras were killed except one male and his sister. He asked these two to light the smelting furnace and operate the air bellows. After blowing for some time a red coloured liquid (slag) flowed out of the furnace bottom. On enquiry Dharmrāja said that it is simply slag and gold. Blow hard and soon your kinsmen will come out with large quantity of gold and silver. When the furnace was broken a large red hot iron bloom was found instead of gold and silver but it was worth lot of gold. Ever since, they began working their furnace only once a day or at night. Many other similar folk tales about Asūra and their God are prevalent amongst the ancient iron making tribes of the country.

RELIGIOUS RITUALS OF ASŪRA

Asūra iron-makers believed in supreme and benevolent creator of all things. They called him 'Paṭ Devotā' and Mahādāni. It seems that Mahādāni is no other than Mahādevo (Śiva) who was worshipped by Aryans also. There could be little doubt in this deity being no other than Rudra. In *Ṛgveda* (III, 3.4), Rudra has been mentioned as Agni (fire), and in *Ṛgveda* (II, 28.7, I,35,10,11 and I.6) Asūra has been mentioned as Sun God, Sāvitrī, Varuṇa and Vaiśvāruṇa respectively and Agni has also been mentioned as Rudra who rules over nourishment:

“Though goes along with flame coloured wind
Bringing happiness in our homes”

Varuṇa has been considered as principal deity of Asūra and he has been considered *māyāvīn* superior to Indra and Agni. Leuva⁵ has translated the prayer Asūrarāja and Rānī offered at the time of performing *pūjā* (worship) of 'Sānsī' (tong) and 'Kuṭasī' (hammer) as follows:

“We the twelve brothers of Asūra and thirteen brothers of
Lodhā offer you on this day of full moon night in Fagun
(Feb. or March) once in twelve months.
We are following the tradition of offering you
Worship as our ancestors have been doing in the past.
Since the beginning of the creation till today we have
Worshipped you in the same manner.
Henceforward let there be no wound or scare on our person.
Let not our iron be brittle, let not iron scatter around
the stone anvil while it is being hammered.
Let it settle down in the furnace in a perfect lump.”

This prayer was followed by Tantric *pūjā* by sacrificing a red cock or hen by holding the head with *sānsī* and strike it with an iron hammer. During this ritual they offered rice, turmeric and wine etc. and this ritual was followed by dance and drink to appease the God.

Another prayer (folk lore) offered to Asūra God by the Āgariyā of Mandla for the successful operation of their furnace, as mentioned by Joshi⁷ and Prakash¹³ is quoted below:

“Lohāsūr bābā we take refuge in thee go and see,
 Baghasūr pāh, Nāgbansi pāḥ go before and stop
 the enemy in the way.
 Go lohāsūr bābā O twelve Āgariā brothers
 O thirteen Tamāsūr brothers, O fourteen Kansāsūr
 brothers we come to thee.
 Victory to Lohāsūr , accept this Dhartimātā , Lohāsūr Bhawānī.
 Help us Dhartimātā, Banaspati Mahārāj.”

In this folk lore the mention of words like ‘Nāgbansi’ and ‘Tāmasūr’ indicate the relation to Śiva. It is also interesting to note that the prayer is made to mother Earth from which iron ore is obtained and to Banaspati Mahārāj i.e. tree from which charcoal could be made, the two essential raw materials for iron making.

The author himself has been witness to the operation of ancient iron smelting furnaces by Āgariyā in 1993 during *Swadesī Vigyān Kāryasālā* organised at Gandhi Vidyā Sansthān, Rājghāt, Varanasi and in 1995 during the 2nd Congress on Traditional Sciences and Technologies of India held at Anna University, Chennai. The master smelters offered rice, turmeric, sacrificed a cock and offered wine to their Devotā (God), performing *pūjā* according to the Tantric cult and only after that the furnace was lighted with the sacred *hāvan* fire to begin the furnace operation. At Rājghat one day the furnace produced only slag and no iron because the bellows were operated by an inexperienced young boy at a faster rate than required. Their belief in the Tantric worship and blessings of their God for the successful smelting was so strong that the head smelter refused to operate the furnace again saying that their Devotā has become angry. Next day only after great persuasion he agreed to perform the *pūjā* once again and then light the furnace. This time the bellows were operated by the master smelter and his wife and the furnace produced good quality iron bloom. Likewise at Chennai the master smelter refused to operate the furnace with local charcoal because he was

afraid that his Devotā will become angry and the furnace will burst. Only after great persuasion and assurance by the author he operated the furnace and with a little technical guidance the furnace worked with better efficiency and produced more iron.

GĀDOLIYĀ LOHĀRS AND THEIR RELIGIOUS RITUALS

As mentioned by Leuva⁵, Joshi⁷, and Prakash¹³, Muṇḍās and their kin had mastered the production of wrought iron from their home made furnaces and they used to sell the refined iron bloom to Lodhā who were probably later called *lohār*. They were expert black smiths engaged in production of weapons, agricultural implements and domestic appliances. They had mastered hot forge welding of blooms, hot and cold working as well as heat treatment. The world famous iron pillar at Delhi is one of the finest examples of their skill of hot forge welding and shaping to produce such an ornamental heavy iron pillar in 4th c. AD.

Many of these *lohārs* used to live a nomadic life for the collection of iron blooms and to sell their new products as well as repair the old agricultural tools, weapons and domestic items in villages and towns. Gādoliyā *lohārs* were one of such tribes from Rajasthan whose life style and religious beliefs have been studied and published by Misra¹⁴. According to him and other sociologists there were several nomadic groups who roamed from one region to another and adopted the cultural traits of the region for their settlement. This was reflected in their dress, language, food and their social customs. Each group had a *panchait* of senior people who controlled their social life and solved their conflicts. Misra¹⁴ has concentrated his studies only on Gādoliyā *lohārs* of Chittor or Marwar. Gādoliyā *lohārs* left Chittorgarh(Marwar) along with Mahārānā Pratāp and took oath to live on bullock carts and never to settle at one place. The history of Chittorgarh goes back to 2nd c. BC. The fort was first attacked by Muslims in 1303 AD, but it remained unconquered till Mughals attacked on Mahārānā Pratāp and defeated him.

According to these *lohārs*, Mahārānā Pratāp had the blessings of Kālikā Mātā who had told him that she will be always at his back but he should never look back. During the war looking at the large army of Mughals he ventured to look back for his followers and he saw her, hence she cursed him. He was defeated and compelled to live in jungles. Along with him the ancestors of these *lohārs* also came away and began living on bullock carts, thus getting the name Gādoliyā *lohārs*.

As regards their profession they believe that their ancestors were taught this craft by the sister of Mahārāna Pratāp (Padma) who was instructed by him to look after these people. Once while travelling, her chariot's axle broke down then she asked these people to repair it. She taught them to make bellows on the pattern of nose, the forge after a mouth, a small anvil after the knee of left leg, the tong after left hand and hold the hammer in the right hand. With these equipment they could repair the broken axle. After this they adopted this trade as their profession and refined their skill. They were believers of the Tantric cult and they worshipped Kālbhairavo and Kālimātā during *Navarātri* to gain magical power to infuse 'Moth' which could harm men and material. During their nomadic life wherever they got settled for long time they used to place a piece of stone preferably under a Peepal tree and worship it as Bhairavo.

Jaikishan and Balasubramaniam¹⁵ have mentioned the religious custom of black smiths of Telangana (Hydrabad). This blacksmith community was expert in thermo-mechanical treatment of Wootz steel and manufacture of world famous swords and other weapons etc. Konasamudram in Telangana has been one of the famous centres for the production of Wootz steel in India. There they have a temple of 'Pedde Māmmāyī' i.e. the temple of the Goddess of meal. The street inhabited by these blacksmiths is called 'Māmmāyī Vāḍā'. In Telegue language 'Pedda' means elder, 'Māmmā' means mother and in Sanskrit 'Ayī' or 'Ayas' means iron. On the first Day of Caitra (in March or early April of Christian calendar) they take out a procession of their goddess 'Māmmāyī' and worship her. On this day they keep their tools aside in front of the deity for nine days, and on the 10th day they worship her and offer prayer before starting their work again.

THE ASURA GOD OF JAPAN

In 1973 Fukunaga¹⁶ published a booklet on 'Life of Sword-smiths in Japan' containing pictures of a large number of ancient paintings of their deity preserved in private collections. Although the exact date of these paintings are not known but they throw ample light on the religious belief of the ancient iron makers and black smiths of the country. Out of the 43 Japanese paintings four prominent ones are being reproduced and described here:

Figure 1 – This painting comprises of four separate groups of pictures i.e. at the top of this wall hanging full Moon and brick red Sun have been painted on right and left hand corners respectively. Below this is a painting of the Japanese God



Fig. 1. Ancient painting of 'Sambo Kojin' and Asūra helping sword-smith which is used for bellow worship on 'Fuigo Matsuri' festival in Japan (Ref.16, fig.17).

'Sambo Kojin' (a combined God of Buddhism and Shintoism) painted in red colour, and on his sides two Japanese priests offering prayer have been painted. Unlike other idols of Japan the salient features of this deity have great similarity to the idols of India. His face has the features of an angry demon or Asūra with three eyes and above the four heads flame is coming out of the hair. The deity is holding various weapons i.e. swords, bow and arrow, dagger etc. in his seven hands and in the eighth hand on his left he is holding a leather pouch.

In the third section just below 'Sambo Kojin' two demons or Asūra have been shown fighting for a woman, and in the fourth section a Japanese black smith is sitting by the side of his forge hearth working on a sword assisted by a devil (Asūra) handling a hammer. The forge hearth is being blown by a piston type Chinese air blower on which offering of rice ball has been made during the

worship. By the side of the sword smith a woman, probably his wife, is sitting to help him. In *Rasaratna Samuccaya*¹⁷ the characteristic features and the role of a woman has been mentioned as who should bring water for successful hardening and tempering of the sword.

Figure 2 – This picture also shows white full Moon on the right hand corner and brick red Sun on the left hand corner. They probably indicate the time for operating the forge hearth either at night or at early morning as described in the Indian *Asūra Kāhani* Nos. 3&4. In this picture ‘Sambo Kojin’ is standing on the wind box holding a number of weapons. Amongst these a trident (Trisūl) is the most prominent one. In front of the wind box, the fire is burning in the forge hearth and a black smith is sitting on the right hand side holding a tong on the anvil. On the left hand side may be seen a dog standing with folded hands. In *Asūra Kāhani* No.1 there is mention of two pet dogs of Mahādevo (Śiva) named Carna Bhairavo



Fig. 2. Ancient Japanese painting of ‘Sambo Kojin’ standing with Trident on a Chinese piston type air blower and a dog standing with folded hands by his side. (Ref.16, fig.35).

and Lilibhuliyā, who were responsible for finding the two children i.e. the first Muṇḍā Asura family. In Hindu mythology dog has been mentioned as the companion, *vāhan* of Kālābhairavo, an epithet of Lord Śiva. The Chinese design of the wind blower indicates the beginning of the iron smelting and smithy craft with the help of craftsmen from Korea and / or China. The wind blower has been included in the worship because it plays a vital role in supplying air under controlled pressure and at desired rate to the iron smelting furnace as well as to heat the iron piece in the forge hearth to the desired temperature.

Figure 3 – In this picture the master iron smelter and his wife are shown worshipping the God ‘Sambo Kojin’. In the middle of this painting an ancient iron smelting furnace (having rectangular cross section) probably the early version of ‘Tātāra’ furnace has been painted. It is being operated with the help of air supply from the two pairs of large piston type Chinese air blowers operated by four labourers, and two master iron smelters are shown charging raw material and controlling the



Fig. 3. Ancient painting of ‘Sambo Kojin’, a ‘Tātāra’ iron smelting-furnace blown with Chinese air blower and a sword-smith with his fellow human helpers. (Ref.16, fig.32).

furnace operation. In the lower part of the painting a forge smith has been shown operating a forging furnace and shaping hot iron piece with the help of his assistants. In this picture the assistants have been painted as human being instead of the Asūra as shown in Fig. 1.

Figure 4 – In this painting ‘Sambo Kojin’ wearing a Japanese dress is shown riding on a dog holding an iron hammer in its mouth. ‘Sambo Kojin’ is holding a leather pouch in his left hand (same as in Fig. 1), probably it indicates wealth. A *manjuṣā* (sacred vessel) has been painted on his hair and another one on the dog’s tail. Most probably these vessels contain the sacred ashes of Lord Buddha.

Other important paintings reproduced in this booklet of Fukunaga¹⁶ are of ‘*Tenbin*’ air blower (of Japanese design), Avalokiteswar (Śīva Buddha), and *Ekādaśa mukhī* (eleven headed) Śīva standing on air blower with an Asūra follower sitting on either side. The last picture shows the tools used by the



Fig. 4. Painting of ‘Sambo Kojin’ in Japanese dress travelling on a dog, holding an iron hammer in its mouth (Ref.16, fig. 21).

Japanese sword smiths in ancient times. All these paintings have been made by Japanese painters in the local style. As regards their dating, from the comparative study of these paintings especially wall hangings shown in Figs. 1 to 4 it seems that these might have been painted at different times. While the painting described in Fig. 1 shows Asūra helping the sword-smith to operate the forge hearth and forging of sword, in the painting shown in Fig. 3 the iron smelter and sword-smith are being helped by human assistants. This picture also shows the rectangular iron smelting furnace being blown by two Chinese piston type air blowers. This means the 'Tātāra' type furnace was already in use but 'Tātāra' or 'Tenbin Fuigo' air blower were not yet developed. The painting shown in Fig. 1 may belong to the Yayoi period (~3rd c BC to 3rd c AD) just after the beginning of iron smithy craft in Japan where as the painting shown in Fig. 3 may have been made during late Kofun period (~6th c AD) or later.

Regarding the worship of 'Sambo Kojin' by the sword- and tool-smiths as well as iron foundries in Japan, Igaki¹⁸, a renowned archaeo-metallurgist and Ex- professor of Tohoku University, has informed the author that the artisans of Japan observe 'Fuigo Matsuri' (bellow festival) on the 8th November by their Lunar calendar, and the wall hangings published by Fukunaga¹⁶ are used on this occasion. 'Sambo Kojin' is the main deity in 'Fuigo Matsuri' who controls fire and furnaces including cooking furnaces. Here Kojin means violent demon and Lord Asūra is considered, in Japanese language, as a violent demon, a fighting A-Shu-ra, who is of Buddhist origin.

In the North- Eastern districts of Japan 'Sambo Kojin' is called *O-Shira-Sama*. *O* and *Sama* mean polite expression but *A-Shura* and *A-Shi-ra*, very similar in pronunciation, suggest of their Indian origin. In Japanese group of folklore *O-Shira Sama* is tightly connected with Shiro/ white, and he is regarded as a God who protects silk worm cultivation. It seems rather difficult how to correlate sword-smith and silk worm.

In order to determine the exact period when these paintings were made and their connection to the iron production and black smithy a brief history of the beginning of Iron Age in Japan is being reviewed here.

BEGINNING OF IRON TECHNOLOGY IN JAPAN

Anazawa¹⁹ has conducted archaeological study of Japan's iron smelting and emphasized that according to Dongyizhauon, Guochutie section of the formal

Chinese history '*wai zhi*' iron was shipped to Han (Korea) and Wai (Japan) till 286 AD. He further mentions that during the middle Yayoi period only black-smithy craft was being practiced in Japan and they used various types of iron pieces including cast iron of Chinese origin. Haba²⁰ has mentioned the beginning of iron making in Japan either in the Yayoi period (~3rd c BC to 3rd c AD) or Kofun period (~3rd to 6th c AD) but Kubota²¹ has supported the beginning of iron production in Japan in Yayoi period. According to Haba²⁰ the earlier smelting furnaces were very similar to those of India and they were blown by foot operated small bellows, but later they were replaced by hand operated Chinese piston type blowers. The shape of the furnace was also changed to make it suitable for producing iron using TiO₂ rich (5 to 20%) iron sand. Soon after in ~8-10 c AD they were equipped with foot operated bellows of Japanese design called '*Tātāra*'. Later in 17th or 18th c AD box type rectangular furnace was developed in Western Japan which was equipped with '*Tenbin Fuigo*' air blowers. It seems that the earlier box type furnace was blown with four large Chinese air blowers as shown in Fig. 3 and later these were replaced by Japanese '*Tenbin Fuigo*' blowers. Permanent '*Tātāra*' (rectangular) furnaces developed in the Izumo and Shimane prefectures(provinces) during 9th-10th c AD have about 20 pairs of tuyeres of 25 mm diameter fixed on the two longitudinal sides of the furnace.

Tate²² and Takahashi²³ have described the construction and operation of this furnace in great detail. This furnace is blown with only two '*Tenbin Fuigo*' air blowers which decreased the number of labourers from 16 to 4 only. In this furnace Titaniferrous iron sand, collected by washing the iron sand in water launders, was smelted and after 20 to 24 hours of furnace operation a large heterogeneous block of semifused iron weighing 1.5 to 3 tonnes was removed from the bottom of the furnace by breaking one of the longitudinal walls. This iron block called '*Kera*' or '*Zuku*' was quenched in water and broken into small pieces for their classified use. The iron pieces rich in iron carbide (1.5% C) called '*Tāmā Hāgāne*' were used for sword making after forge welding a large number of selected pieces and homogenising the forge welded mass. Agrawal²⁴ has also confirmed the beginning of Japanese Iron Age in late Jomen or Yayoi period (~5th c BC) and concluded that iron as well as bronze production processes arrived in the country through Korea and China.

Rubin and Ko²⁵ and Rubin²⁶ have conducted a detailed archaeo-metallurgical study of the early iron and steel technology of China. Most of the iron objects dating back to 9th c BC or earlier have been found containing high

percentage of Ni confirming their meteoric origin. The traditional iron smelting sites have been found in the Sanmenxia, Hanan; and Xinjiang region which are very near to the 'Silk Road' confirming the possibility of technology migration along this road. Most of the Chinese iron making furnaces were similar to the Indian furnaces but they were most probably blow with Chinese piston type air blowers. These blowers were capable of delivering larger quantity of air at higher pressure than *Bhattī* of Indian design. This had resulted in achieving higher temperature in the furnace producing cast iron instead of hot iron sponge or wrought iron. The high phosphorous content of the Chinese iron ore also facilitated the production of Cast iron. The Chinese craftsmen are credited for the development of cast iron casting process and also invention of malleablizing process to produce semi steel. Rubin²⁶ has concluded that production of white cast iron and malleablizing process was being practiced in China during 5th -6th c. BC. Tylecote²⁷ has also discussed the possibility of spread of cast iron technology from China to Europe through the 'Silk Road' in 14th-16th c. AD. In a recent paper Wagner²⁸ has reviewed the Chinese steel making techniques like cementation and cofusion which are much different from the malleablizing process. These processes also date back to 6th c. AD, and according to many Chinese writers large number of centres of iron and steel production were located in Sogdian Estate of Ustushana, a mountain region East of Samarkand and Ferghana Basin along the 'Silk Road'. About the Indian Wootz steel he writes that several ancient Chinese texts of 6th-7th c. AD mention 'Bin Iron' and terms like *wie-shu*, *zhou-shu*, *bei-shi* and *sui-shi* which were probably imported from India through Kashmir and Afghanistan.

In Korea the Iron Age seems to have begun in 7th c. BC by migration of technology from China. The iron metallurgy in Korea has been reviewed by Yoon²⁹. He has confirmed the trading of iron and steel with Japan during the Yayoi period (~2nd c. BC to 2nd c. AD). Kubota²¹ has given a detailed account of this trade link and the introduction of iron ware culture in Japan and supported the migration theory from China to Japan through Korea during the spread of Buddhist religion.

DISCUSSION

As narrated in the *Asūra Kāhāni* and folklore, the Muṇḍā and other *Asūra* tribes of India have worshipped Lord Śiva for the successful smelting of iron ore and fabrication of iron. He has been mentioned in the Hindu philosophy

as God Supreme both in the *Sanātan Dharma* as well as in Tantric cult. Biswas³⁰ has mentioned that Śīva is also called Mahākāl and Bhairava. According to *Viṣṇudharmottara purāṇa* the deity with swaying right hip (*Sācīkīrtam*) is designated as Bhairava but if he stands frontally (*sammukha*) he is called Mahākāl. Similarly there is no difference between Hindu Bhairava and Buddhist Mahākāl (cosmic destroyer). The growing popularity of the Pāsupatas and Kāpalikas during Gupta period persuaded the Buddhists to directly adopt the concept of Mahākāl and he remained as an important deity in the Vajrayan Pantheon. According to *Śīva purāṇa*, Bhairavo is the full form of Śaṅkara. He is also called God par-excellence of creation, protection and destruction, and all other Gods are his ancillary. The temple of Mahākāl at Ujjain (Madhya Pradesh) is very famous and there he is worshipped by offering *sūrā* (wine) following the Tantric cult. Ujjain has also been a very important ancient centre for iron production and fabrication. Surprisingly the temple of Mahākāl is also found at other important ancient iron making centres in Rajasthan and Madhya Pradesh as well as at Koraput in Orissa. The temple of Tanginath at Netarhat is worshipped by the Muṇḍā and Bīrjiyā Asūra of the area. As described earlier the worship of Kālbhairavo and Bhairavo has been mentioned in the folk tales of Muṇḍā Asūra and Gadoliya lohār.

The Japanese ancient iron smelters and black smiths have worshipped 'Sambo Kojin' as their deity for the successful iron production and its processing. Igaki¹⁸ has described 'Sambo Kojin' as a demon (Asūra) deity. 'Sambo' is phonetically very similar to Śambhu i.e. Śīva, 'Kojin' in Japanese means violent demon and *A-Shu-ra* is concerned with fighting of Buddhist origin. *A-Shur-ra* and *A-sh-ra* are very much similar in pronunciation of Indian Origin. Asūras are known to be courtiers and assistants of Lord Śīva or Mahākāl who has many demon like epithets, such as *Kālbhairavo*, *Āmrodaka* and *Pāpabhakṣaṇa*. *Kāl* or the God of death trembles before him hence he is called *Kālbhairavo*. He kills evil persons therefore he is called *Āmrodaka* and he eats all sins of his devotees hence he called *Pāpabhakṣaṇa*. He has eight different aspects viz. *Aśītāṅga*, *Ruru*, *Chanda*, *Krodha*, *Unmatta*, *Kapāla*, *Bhiṣma* and *Sanḥāra Bhairava*. Buddhist Tantrics called *Vajrācāryas* officiate the worship of Bhairava in Nepal. In Buddhist religion Mahākāl is regarded as one of the Dharmapāls and in Tibet Buddhists worship Vajra Bhairava.

Since in Japan 'Sambo kojīn' is worshipped as the deity of 'Fuigo Matsuri' on 8th November by the Japanese Lunar calendar and the birthday of Kālbhairavo,

one of the demon epithets of Śīva, is also celebrated on *Bhairavo Aṣṭamī* (8th day by the Indian Lunar calendar) of Mārgaśīrṣa month which generally falls in November/December month of Christian calendar. If these dates are considered to be same then Japanese deity 'Sambo Kojin' is no other than Kālbhairavo. He has been mentioned in the 31st chapter of Kashi Khaṇḍ of *Skandapurāṇa* as one of the 64 Bhairavas in Kashi (Varanasi, U.P.) depicting different characters. Vishuvalingam³¹ and Hari Shankar³² have published details regarding 8-10 major Bhairavas and their temples spread all over Varanasi.

Kālbhairavo is Śīva (Bhairavo) full of anger and most powerful demon warrior. He is considered to be born from angry fire coming out of the third eye of Lord Śīva to fight with god Brahmā and destroy his pride of being the God Supreme. After cutting the fifth head of Brahmā and defeating him Kālbhairavo was blamed of sin of cutting the head of a Brāhmin. When he enquired about *mukti* (penance) from this sin he was advised to bathe in river Ganges at Kashi and leave the Brahmā's head in the river, which he followed. After this Lord Śīva appointed him Kotwal (magistrate) of Kashi which he is guarding even today with the help of his companion and *vāhana* dog (see figs. 2 and 6). Kālbhairavo has been described as having one or more heads and two to eight or ten hands holding variety of weapons. Unfortunately all the idols of Bhairavo in Kashi have suffered damage during the past and today not much detail is available except in the form of few sculptures from the Buddhist period and few paintings from Nepal belonging to their Tantric tradition (~11th c AD). The following illustrations are being reproduced by the courtesy of Bharat Kala Bhawan, Banaras Hindu University, Varanasi.

Figure 5 – It shows a bronze icon of Kālbhairavo from Nepal. He is sitting in *padmāsana* on an ornamented *vedikā*. His smiling face is decorated with an ornamented *mukut* (crown) on his head. He is wearing *kuṇḍal* in his ears and an ornamented *hār* (necklace) in his neck. Out of his four hands he is holding swords in his upper right hand and in his upper left hand he is holding a bow. His lower right hand is holding an arrow and his lower left hand is in *abhaya mudrā*.

Figure 6 – It is a photograph of a stone sculpture of Kālbhairavo in standing posture. It is also having four hands. His head is decorated with ornamented headgear and his hairs are flowing upwards like a flame depicting anger. He is wearing *kuṇḍal* in his ears and a beaded necklace around his neck. In his upper



Fig. 5. Bronze icon of Kālbhairavo from Nepal (Bharat Kala Bhawan, B.H.U., Varanasi).



Fig. 6. Stone sculpture of Kālbhairavo and his *vāhana* dog standing near his feet. (B.K.B., B.H.U.)

right hand he is holding a trident and a club in his upper left hand. In his lower right hand he is holding a bow and his lower left hand is in *abhaya mudrā*. His pet *vāhana* and companion a dog is standing in the background near his feet.

Figure 7 – It shows two paintings of Kālbhairavo Rudra in demonistic *mudrā* painted in red colour. The left hand picture (a) shows the deity standing in fighting pose with fierce face and he is holding a variety of weapons in his four hands. He is wearing a garland which seems to be made of human skull. His pet dog is sitting near his feet and he is surrounded by Agni (flame). The right hand figure (b) is painted in black or deep red colour and in this figure Kālbhairavo is having six hands holding a variety of weapons. In this painting also Kālbhairavo is surrounded by flame and a dead man is lying at his feet indicating his *Mahākāl mudrā*.

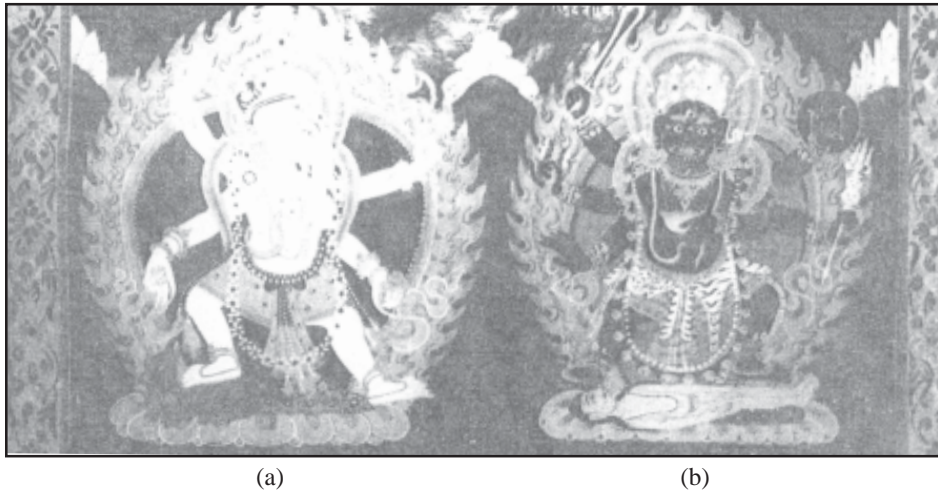


Fig. 7. (a) A painting of Kālbhairavo Rudra with his *vāhana* dog sitting near his feet. (B.K.B., B.H.U.) (b) A Painting of Kālbhairavo Rudra with a dead body lying at his feet. (B.K.B., B.H.U.)

Figure 8 – This is a painting of *pañc mukhī* (having five faces) Kālbhairavo in sitting posture, and his companion dog sitting near his feet. This is a painting of Rudra Kālbhairavo in terrifying *Asūra Mudrā*. All his five faces are having three wide open eyes (similar to Lord Śiva). They are nearly bulging out and they have thick eye brows. His open mouth is showing sharp teeth and his hair is flowing upward. He is wearing *kuṇḍal* in his ears and his head is surrounded by a multi coloured *Aura*. His neck is decorated with a variety of beaded necklaces, a garland and a snake. In his ten hands he is holding a variety of weapons like



Fig. 8. This painting of Nepalese origin shows Pañchmukhī Kālbhairavo in sitting posture. (B.K.B., B.H.U.)

sword, bow and arrow, pash and trident etc, and his lowest right hand is in *abhaya mudrā*. His iconographic features are very similar to that of Mahakal described by Biswas(30).

The common link regarding the worship of Asura as the God of iron smelting and smithy craft in India as well as Japan and the iconographic similarity between Kālbhairavo and ‘Sambo Kojin’ have provided a strong proof in favour of the possible migration of Indian craftsmen or their technology from India to Japan. From the history of Iron Age in Japan (~3rd c BC) it is obvious that India had mastered the indigenous iron smelting technology at least 1500 years before that in Japan. In Korea the iron smelting was begun in 4th c BC where as the same had it’s beginning in China in 6th c BC. This supports the possibility of migration of iron smelting and processing technology from India to Japan through China and/or Korea. Kubota³³ has mentioned the ancient tradition of worship of iron stone block by the Korean iron smelters for successful iron smelting. Masuko³⁴ and Tylecote²⁷ have mentioned the import of copper and bronze objects in Japan from Korea and China before iron but there is no mention of worship of Asūra

or 'Sambo Kojin' or any other deity. The history of copper in China published by Gowland³⁵ and Needham³⁶ also do not mention the worship of Asura God or air blower by the Chinese craftsmen. This clearly shows that the tradition of worship of air blower and Kālhairavo as 'Sambo Kojin' had its beginning in Japan only with the introduction of iron technology during Buddha period.

The iconographic similarity between the Asura or demon God 'Sambo Kojin' and Mahākāl/Kālhairavo and their worship in the two countries following the Tantric cult as well as the association of Asūra with the production of iron and smithy craft indicate a strong probability of technology migration from India to Japan during the spread of the Buddhist religion. In Japan these technologies might have reached from India following any one of the routes given below:

1. Since the Indian Maritime trade was well developed during the Saraswati and Harrappan period the iron technology might have been introduced in Japan by the Indian traders or craftsmen arriving there by the sea route.
2. Chinese travellers, silk traders and scholars have been coming to India across Himalaya through Tibet, Nepal and Bhutan etc. Some of them might have learnt the Indian craft and carried it to China. From there this technology might have reached Japan through Korea following the Silk Road.
3. The beginning of smithy craft and iron smelting in Japan might have been started by the Buddhist iron craftsmen who went to China, Korea and Japan through Silk Road and Afghanistan during the Kuṣān period (100-120 AD) or latter. A section of the Silk Road bifurcates towards South and reaches near ancient India. The travel of Buddhist monks in 710 AD along the Silk Road carrying ~500 Indian Tantric texts to China has been mentioned in the History of Afghanistan.

In order to determine the exact route of migration of iron technology and associated religious deities and religious rituals it is essential to study the old records, traditions and the social culture of the ethnic groups engaged in iron making and smithy craft in China, Korea and Japan.

CONCLUSION

From the ethno-technological history of the ancient iron and steel makers as well as black smiths of India and Japan reviewed in this paper the following conclusions could be made:

1. The Asūra Kāhāni and folklores of Muṇḍā Asūra and Lodhā (later called lohār) describe their religious deity and their worship as well as confirm an early and independent beginning of iron technology in India.
2. Asūra Muṇḍā and Lodhā worshiped Mahākāl / Kālbhairavo following the Tantric cult and even today they have kept alive their religious rituals and traditional iron making.
3. The iconographic similarity between Mahākāl/Kālbhairavo and ‘Sambo Kojin’ as well as their date of annual worship (by Lunar calendar) indicates the possible beginning of Iron Age in Japan by migration of Buddhist iron craftsmen from India.
4. The migration of smithy craft and later iron smelting process in Japan either in Yayoi or Kufun period or latter in 8th -9th c AD could have taken place from India through one or more of the following routes.
 - a) Sea trade route through Indian and Pacific oceans.
 - b) Technology Carried by the Chinese travellers and traders across Himalaya.
 - c) Technology migration through Afghanistan and Southern Silk Road during the spread of Buddhist religion.

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