Clay-traditional material for making Handicrafts

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Art in handicraft has been regarded as timeless and dateless. Clay and terracotta figures have been existing continuously from pre-historic times. There have been an implicit continuity in the traditional knowledge and technology of making artefacts of clay by adding several materials and if required, firing the artefacts thus made. The fired clay was called burnt clay or terracotta. Clay as a base material for hand crafted item has been used all over India for several types of finished products. There has been a variety of materials added to the clay, techniques and equipments for making several forms and decorating these forms across the length and breadth of the country. The paper discusses the variety of the variety of the clay components, shaping and firing techniques used to create variety of forms.

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Decoration on the clay and terracotta objects is limited to adding pigment motifs, getting textural effects at the time of firing or making appliquéd motifs with clay itself. In unique instances, the clay core becomes the primary source for the decorations to be obtained on the metallic object. The core clay is decorated with threads or sheets of wax or resin. These take impression on the upper layer of clay mixed with rice husk. The molten metal takes the design of the wax or resin on middle layer of clay. The remains of terracotta vessels, sculptures, beads, blocks, seals and tools found in every section of Indian history from Indus Valley Civilization, i.e. 3500 BC to the beginning of twentieth century are similar to those used today by the craftsperson as the living practice. Therefore there is continuity in the knowledge of materials, the techniques used to shape various forms. The paper is an attempt to bring this traditional knowledge with a contemporary variation into a sequence.

Clay and terracotta was extensively used in the Harrappa times for making the seals, sealings, figurines, toys, dices for the board games. Archaeologists on discovery of more than 3000 seals, throughout the Indus Empire particularly in the industrial and commercial centres like Mohanjodaro, Harappa, Lothal, Chanhu Daro and Kalibangan have opined that the seals were used for sealing the outgoing cargo in the warehouse of the major port of Indus empire. There is symmetry of scenes engraved on these seals. Minute muscular details, moods of the animals, both domesticated and wild speak of the skill of the art of engraving of the seal engravers. The realistic rendering of bull, goat, elephant, tiger, rhinoceros, water buffalo, etc. also speaks of the familiarity of the people of these times with such animals. It is opined by the archaeologists that the label of wet clay covering packages containing various materials for export were impressed with the seals for authentication of the content. The wet clay on the margin of the seal impressions was further pressed with fingers. The manufacture of seal seems to have disappeared in the late Harappan times perhaps because of the decline in long distance trade from these ports. Other significant account of clay materials has been found in the Harappan cemeteries, where a large number of burials have been excavated including the pot burial (Fig. 11). A large number of clay pots and items of everyday use were kept along with body. These distinctly speak of the abundant use of clay materials in every day human life. Female figurines of clay popularly called mother goddesses of the Indus Valley are crudely modelled female forms, adorned with necklace over the prominent breast, wearing a lion cloth and a girdle. Apart from these human figurines, clay and terracotta articles found in Indus Valley include several animals such as bull, monkey, buffalo, dog, horse, rhinoceros, ram, etc. Several wild animals and toy carts are also excavated. A very peculiar excavation mentions the dice use for play games similar to chess along with the chess men produced in terracotta. The dice discovered at Lothal
has markings 1 opposite 2, 3 opposite 4, and 5 opposite 6. Game boards of terracotta and bricks have been found at Lothal, Harappa and Mohanjodaro. Terracotta animal and human figures with limbs that could be manipulated with stings are suggestive of puppets. Terracotta masks were also found in Mohanjodaro. The cultures excavated and nomenclature as Indus Valley civilization stretch from Mohanjodaro in Sind to Ropar in Punjab to Lothal in Gujarat and Banawali in Haryana. Dholavira: a Harappan City, Gujarat, district Kachchh, currently a world heritage site depicts a series of mounds, located between two rain-water channels, viz. the Manhar and the Mansar, is about one km northwest of the village of Dholavira and covers an area of more than 100 ha. The remains consist of two parts, i.e. the fortified city and the cemetery. In its heyday, the city was a multi-divisional settlement consisting of a citadel (castle and bailey), a middle town, a lower town, a large stadium, a small stadium and a series of reservoirs surrounding them. All these were set within an outer fortification designed like a parallelogram.

Dholavira site is one among the 5 largest Harappan cities in the subcontinent; Dholavira has yielded many firsts in respect of Indus civilization. Fourteen field seasons of excavation through an enormous deposit caused by the successive settlements at the site for over 1,500 yrs during all through the 3rd millennium and unto the middle of the 2nd millennium BC have revealed 7 significant cultural stages documenting the rise and fall of the Indus civilization in addition to bringing to light a major, a model city, which is remarkable for its exquisite planning, monumental structures, aesthetic architecture, amazing water harvesting system and a variety in funerary architecture. The excavations at this particular site reveal the clay and terracotta technology, the people were familiar over the continuous period. For the first time, three square steatite seals much smaller and lighter and furnished with figures but without inscriptions appeared in addition to a potsherd bearing Indus signs, and also a cubical weight. Besides, a good number of classical Harappan pottery forms with painted motifs made their debut. Banawali, the site in Haryana has also given large excavated material in clay and terracotta. Banawali is located 15 km northwest of Fatehabad, on the left bank of dried up bed of the Saraswati. The excavation at Banawali reveals three periods. Period I (c. 2500-2300 BC) is indicated by the existence of well-planned houses made of kiln-burnt and moulded brick. In technique, decoration and general appearance the pottery may be divided into two broad groups: one is thin and light in fabric with pink or buff colour and is elaborately painted in black. White pigment has been used to give prominence to the principal motifs. The shapes comprise the vase and jar. The second group represents a finer variety of pottery marked by a superior texture and surface treatment. It is probably made on fast wheel and is comparable with the Harappa ceramics in fineness. The pottery assemblage is quite similar to the assemblage of Kalibangan I. The main finds comprise beads of gold, semiprecious stones, terracotta and steatite and bangles made of clay, shell, and faience. In Period II (c. 2300-1700 BC), a well-planned fortified township laid in the typical Harappa chess-board pattern was established. The red ware is typically of Harappa and has a sophisticated finish. The shapes comprise the dish-on-stand, fruit-stand, S-shaped jar, storage or refuse jar, perforated jar, vase, cooking, beaker, basin, goblet, chalice cup, handled cup, etc. They are painted with animal and floral designs. Period III (c. 1700-1500/1450 BC) represents the BARA ware culture, the remains of which are traceable in the pits cut into the Harappa levels of the mound. The ceramics of Periods II and III are different from each other in respect of fabric, slip, potting technique and painting, though certain Harappa traditions continue in pottery, terracotta nodules and cakes. The excavation makes it clear that the Harappa brought with them their mature and well-developed traditions and lived side by side with the earlier residents. The Bara ware may be termed as post-Harappa or at best a late contemporary of the Harappa.

**Materials**

Clay is one of the cheapest materials, which requires very few unsophisticated tools and easy to handle but the imaginative skills of the artisans transform this simple material into an aesthetic art. Any clay is not used as found in nature. There are different varieties of clay obtained from river bed and fallow land. These are different in their texture colour and composition. The clay is first cleaned by removing pebbles, fine gravels, roots and other impedimental materials. This requires fine sieving of the clay (Figs 1-3). Apart from mixing to or more variety of the clay is also improved by adding tempers such as ash, sand and cattle dung. The temper counter acts excessive shrinkage, warping or splitting which may occur in sun drying or firing. Donkey dung is mixed in Maharashtra and Madhya Pradesh, the black...
cotton soil area. Ash or sand is mixed in the desert area of Rajasthan. The proportion of temper mixed in clay varies according to the requirement of a particular surface area. Two different proportions of clay and sand are among the types used for preparation of a single pot and cooking pot. This practice is prevalent in Rajasthan and Kashmir, where a mixture of 50% sand and clay is used for the bottom of the pot and 10% sand, 90% clay for the upper body. Kneading by hands and feet is important process to increase the elasticity of the clay. Before preparing the dough, the powered clay and the temper are finally mixed. Water is added to this mixture to prepare dough. Dough is needed by hands and feet (Figs 4-7). Clay is repeatedly cut with knife in the fine vertical slices to ensure removal of any foreign material. This needed repeated rotary movement of palm and feet. The content of the clay used for making artefacts varies from region to region. The clay found in Manipur of Northeast India is hard like stone, which is finally powdered and mixed with another variety of clay.

Techniques

The techniques primarily used to create forms are

(i) Hand moulding, and
(ii) Wheel throwing

Hand moulding

Hand is the most important tool for creating any forms from clay. Four important processes of hand mouldings are pressing, moulding, strip method and smearing. Smearing is processes, where clay mixed with cattle dung is used to reconsolidate the walls, floors, storage containers, hearth, etc. in a traditional Indian home. The process, known as lipaee was essential to the every day living in an Indian village. Even today, many of the rural houses smear different courtyards of their houses and decorate with drawings as part of the every day cleaning activity.

Pressing

Lump of clay is pressed in hand between the thumbs and fingers to create forms. This technique has been followed by Handakia potter of Almora, Hatere potters of Bundelkhand (Figs 15,16), Bhonid potters of Maharashtra, Mulela potters of Rajasthan and Manipur and women potters of Goalpara of Assam.

Hand moulding

Plaster of Paris or red flay biscuit mould is generally the base support, on which a pump of clay rolled into a sheet is placed. This sheet is spread by pressing with hands on the mould to take the desired shape of the mould. Several containers, such as dalis and surahis are hand moulded in Punjab, Rajasthan, Haryana, Uttar Pradesh, etc. The clay sheet, which takes the shape of the mould is sun dried and removed from the mould; designs which required are appliquéd on the body.

Strip method

The base is prepared by flattening a rolled sheet and moulding its edges inwards to create a bowl like shape. The height of the object is raised by sticking separate strips of clay one after other and pressed with hand to unite. The strip may be flat or rolled. This technique is also called coil pottery.

Revolving base or Lumnette

This technique is uniquely popular in Northeastern India, particularly Gwalpara in Orissa and Manipur (Fig. 8). The craftswomen of Gwalpara (Assam) use bowl as the mould. The clay lump is rolled into a cylinder and press down. This spread out into a circular slab, is split into the bowl shaped mould. This entire structure is continuously turned by the freehand like a wheel throughout the shaping of the object. Outer surface of clay slab expands slightly while remaining in direct contact with the bowl giving it an interesting texture. The pot is sun dried and then another layer of clay is added. Very large pots are also made by this technique using hemispherical on the ground as mould. The pots are upturned after making and left in a flat pan to sun dry.

The potters of Manipur use a technique, where a flattened clay sheet is placed on the circular wooden base. This sheet is rolled into a cylinder by lifting up the edges with both hands. The lump diameter of the cylinder pot is directly proportionate to the desired size of the pot. After curving, the edges are completed and the 2 shorter ends are joined. The other end of the tube is closed by squeezing or if required by adding another round cake of clay for the base. The surface is smoothened with fine strokes of bamboo split. This basic shape is placed on the wooden platform. There are 2 processes to make the small pots and the big pots. A wooden platform is generally placed on the knees. The edges of the pot are supported with the coil of rag and rotated. The bigger pots, which cannot be supported by the knees, are paced on lepsum, a circular wooden platform. The neck and rim are made by moving around the pot holding its rim with a piece of wet coarse cloth. The thumb remains on the outer
side and the rest of the 4 fingers remain inside the inner wall. The wet cloth is held in the other hand, where the fingers remain outside and the thumb is inside. The inward pressure is created by the thumb while moving around the pot; simultaneously the outward pressure is applied by the tips of the fingers. Potters from Charel region of Manipur use a turn table, which is turned slowly by the left hand while the right hand remains engaged to make and smoothen the rim and neck with the wet cloth between the thumb and the fingers. Sometimes, an additional base supports are attached by pinching them with the body. After the rim of the pot is found, the basic shape is extended by inserting right hand, which holds a dabber and pushes evenly and slowly with little force while support pressure and control is given by the other hand from outside using a wooden dabber. Very thin walled pots are created by deft expansion using the wooden mallet (Fig. 14). The pots are dried in shade. Many a times, an inverted pitcher is also used instead of the wooden plan, around which the women potter moves to get the desired shape.

**Wheel throwing**

Wheel is an important equipment to add speed to the pottery making (Figs 9,10,12). The circular motion of the wheel helps to create a round form at a speed. The most primitive wheels made of sun baked clay are continued to be used even today. In this particular wheel, a mixture of clay, creepers, ropes, goat and human hair is used to bind the rim. If required, the groove is formed in one of the spokes to fix a long stick for the purpose of rotation. Wheel is rotated briskly to give it a circular momentum. A lump of prepared clay is placed on the hub (thala). The potter creates a form using both the hands while the wheel is still in motion (Fig. 13). The wheels are also made of wood and sand stones. Wooden wheel has spokes and the hub (thala) is made up of wood, while mixture of clay creepers, ropes, hair, etc. is used to bind the rim. Sand stones wheels have central hub with no spokes. A circular slab with a depression adds one point and a central hub is the sand stone wheel. These days motorized wheels are also used. These wheels are the technological development over the sand stone wheel, where a motor is attached to give the circular momentum to the wheel.

**Firing**

Since the sun baked clay objects do not last long, their use was restricted to making the tiles and the votive forms and offerings. Some times, these votive images were emerged in water or buried in the ground. Firing is an important technique practised by the potter to give sturdily to the clay object. There are 2 types of firing, the open firing and the close firing. In open firing, the pots, plaques and other forms are placed in the centre in an open area. These are then covered with cow dung, cakes, shredded terracotta, dried husk, etc. Some times, a ring of fired pots used for water wheels is placed around the circumference to the pile. The gaps in between become the stocking passage for wood. This practice is followed in Molela village of Nathdwara (Rajasthan). In villages Masora of Madhya Pradesh and Mandipur, pots are laid on a bed of wood preheated with ignited cow dung placed inside each pot, animal figures are other forms are laid on the top and covered with more wood and straw. This kiln is enclosed with shred and ash before firing. In the open firing technique in Gujarat, the outer rim is created by placing the inverted pitchers all around the circumference of the votive offerings, called Dhabu. The inverted pot shred are covered with buffalo dung cakes and straw. A mixture of cut grass and border clay is spread over the straw to weigh down.

In Maharashtra, Tamil Nadu, Delhi and Uttar Pradesh, the firing pits are made by dung and a boundary with terracotta bricks is made. Such pits are pathway between an open firing and close kiln firing. Reinforced brick wall on the 3 sides conserve the heat and helps to protect the pots from the elements. Furrow of husks are formed in the bottom of the pit. The large pots are placed in between these furrows on the support of terracotta pieces to allow the heat to circulate underneath. Wood is stocked in between the rose of pots once the rice husk is burnt away. In Delhi, the circular kilns without an opening are used for firing. The pots are placed in circular sequence one upon the other, with smaller pots placed above the bigger pots. Wood, rice husk, saw dust, etc. are fed into the kiln through a small opening at the base. In Tamil Nadu, the kiln is made in an open horseshoe shape. The construction is done by bricks and stone walls with slow tapering inwards. The floor of the kiln has movable tabular props with support shreds under which the fuel is stopped. The entries of the kiln are at a higher level than the back, where there is a stocking mouth. In the Paddukotai area of Tamil Nadu, large Aiyanar horses are fired in these kilns along with large and small pots. The wood is arranged around the large horse placed in the centre,
interspersed with shreds. The pots are stacked, inverted on top of the horse with more wood and shreds. This pile is covered with the shreds and cow dung cakes.

Close firing

There are several potters, who are practising smoke firing to give black colour to the pottery. The potters of Ajamgarh in Uttar Pradesh are known for such black wares, which are fired in the pots. The firing chambers are several egg-shaped containers about 90 cm height with enlarged openings. A mesh of thick and thin metal wires is formed to cover these pots for firing. These firing pots are placed in a 45 cm deep pit filled with thick layer of ash from previous firing and buffalo dung. The pit is lined with dung cakes and the fire chambers are fitted inside. After arranging the chambers several other containers are also put into the cover with a lid and a mixture of ash, dung, and water is sneered around the seam to seal it. Bricks are placed in a line around the circumference of the base leaving a gap through which to stoke the ignited fuel. Shreds are propped up with bricks and stand about 2/3rd of the weigh of the height of the kiln. When the kiln is completely packed with damp ash compressed against the surface to hold the fuel and retain the heat. The kiln lighted and all the smoke is packed inside by adding more damp ash on the surface. The blackening of the pots is enhanced by adding some dried goat dung into the kiln and again rescaling with the ash. This process is done repeatedly 2-3 times after the kiln has been lighted for 2 \( \frac{1}{4} \) hrs. This chamber is then covered completely with ash again and left until next morning. The lid of the chamber is removed and highly polished black pots are taken out. The technique of black firing or the smock firing has been amicably adopted these days by the potters of Delhi, Manipur and Haryana, whereas a black patch on the pitcher or a surhai was considered to be a lacuna in open firing. These days deliberately certain portions of large pots are covered with dung cakes and sealed to retain the smoke within the selected areas of the pot. This kind of firing gives a tonar lusture to the pot with smoke spreading in gradation around a particular surface with black colour. Black pots are also available in Madhya Pradesh. Giriraj, a potter recently awarded with Shilpguru is a skilled in this kind of smoke tarnished firing.

Forms/Decorations

Clay/terracotta firing have been used for the simultaneous purposes as below:

i) Forms for architectural utility such as bricks, roof tiles or terracotta tiles (Fig. 17).
ii) Shrines such as terracotta (Figs 25, 26); Aaiyannar (Tamil Nadu); Dev Narain Shrine (Rajasthan); Shaileshthtan, Brahamasthan, Madhubani, Darbangha (Bihar); and Bankura (Bengal).

iii) Votive offerings: Dhabu of Gujarat, Madhya Pradesh, Votive horses, etc. (Figs 18-21, 23).

iv) Storage bin
v) Utility containers, pots for storing, drinking water, cooking, storing oil, food, etc.

vi) Fashion accessories; beads for jewellery, etc.

Architectural forms

Architectural forms in terracotta have been found in the earliest civilizations. The clay bricks baked in sun, which have been found in archaeological excavation are made even today by the Meghwal and other communities of Indian desert. The eastern part of the country, i.e. Bengal and Assam developed the terracotta bricks with iconographic details. The terracotta bricks of Maurya Sanga period show detailing of dresses discovering facial characters, which speak of the high skill of workmanship. Bengal terracotta rose to a great height in the beginning of Kala period under the liberal patronage of Dharampal, who was responsible for the temple at Paharpur and huge monasteries. Local clay modellers were engaged to perform the task of carvers. Slim elongated well modelled figures of God and Goddesses of Hindu pantheon, figures of Buddha and other dignities of Mahajama skill were produced in the lush profusion for nearly 500 yrs. However, this art met its own slow natural death for lack of patronage from the rulers. Known as terracotta plaques, these were carved in the sequence of the story and then fired. These were fixed in the series of panels according to the narrative. Today in twentieth century, terracotta plaques are manufactured by the local potter in Mulela (Rajasthan) for the installation in local shrine of Devnarayan and other Gods in various anthropomos of Rajasthan region including Bheel, Gujar and Gurijat reached the village Mulela in the month of January to buy the terracotta plaques depicting their Gods. The deity is worshipped before returning home for installation in the shrine near the bank river Banas. Thus, plaques depicting local deities heroes are painted in shocking colours and highlighting several in silver colour.

The tradition of Mulela terracotta plaques has taken a new turn today, when the consumer market is fitting such plaques as part of the interior and exterior in the
homes and hotels, etc. The ritualistic significance of the plaques gets defused. However, the decorative perspective gains importance. Earlier, i.e. in 80s, when these plaques were brought into the city the traditional folk deities were moulded. However, under the influence of the urban environment, the Mulela potters started hand moulding various themes including their own world view. The basic shape of these plaques was also changed from a temple like appearance to rectangular or square tiles (Fig. 27). With the holes in 4 corners, these plaques could be comfortably screwed into the wall. Roof tiles are other set of architectural utility items used for covering the roof. Generally, these are the elongated cylinders cut into half. These are used to cover the roof by placing them on the rectangular place. In many part of eastern India, particularly Bihar and Orissa, it is customary to place a figurative clay roof tile interspersed with the plain tiles. The potters from village Barpali, Sambalpur of Orissa were traditionally making figures of birds and animals, ghosts and spirits with a belief that these figures would prohibit the malevolent influence of the spirits from entering the house. Today, few potters of Barpalai village, particularly the Manbodhrama introduced several moods and gestures of the common monkey, other birds and animals, thus bringing the making of roof tile into the anterior decoration in the cities. Roof tiles with various themes are also made in Raigarh and Sarguja districts of Madhya Pradesh (Fig. 24).

Shrines

Terracotta shrines are found all over India on the roadside as well as village centre or under a tree or village outskirts (Fig. 22). There are several levels of worship among the Hindus. The worship may be done at a temple or at a local shrine, within the household or some other defined, sanctified area. These local deities some times are linked to the classical Hindu religion but generally they are associated with Mother Earth, fertility agriculture, forces of nature, illness and disease, and its ceiling, etc. The votive terracotta shrine may have many forms depicting horses, elephants, bulls, camels, figures, boars with or without rider figures of mother & child, saptmatrika, etc. Some of the votive shrines have very large horses erected to protect the village. Ayanar shrine from Tamil Nadu is the exclusively characteristic shrine, which has very large horses, human figures up to the height of about 2.13-2.43 m. A shrine from Mansha, a snake Goddess in Bengal has a terracotta shrine depicts coils of snakes and snake hood. Darbanga and Madhubani districts in Bihar have clay and terracotta shrines of Shailesh sthan, Brahmsthan, where apart from the principal deity of a rider or elephant or tiger, female and male characters also make an important component of the shrine.

The terracotta shrines of Rajasthan are the hand mould plaques. Apart from the religious shrine, terracotta, human and animal figures are also made for offering as the votives on the shrines or other shrines. A vast range of folk stylization and characterization of different animal and human forms are seen in these shrines. These forms have marked regional stylization. The votive offerings at time also have different parts of human body such as eyes, ears, hands, naval, feet, ankles, male and female genitals, which are offered by Chaudhary and Bhil and tribes for the healing or curing an ailment in that particular part of the body. For example, a clay eye is offered for an injury in eye; an arm is offered for a fractured arm, etc. The complete figure is offered for the physical ailments including fever, etc. Dhabu is an offering to the spirits in Gujarat. Dhabu (spirit houses) are placed near the shrines and allowed to be weathered. The freshly prepared Dhabu are made to accompany a dead man’s spirit. The Dhabus are painted white and have vermillion dots. Dhabus are generally available ready in the potter’s family for any one to buy to perform the funeral rights.

Storage bin

In the traditional rural India, it was customary to make storage bins of clay and jute for storing the annual crop. These storage bins were made in square rectangular or circular shapes in hand moulding technique adding clay layer by layer. The cow dung is mixed in the clay for preparing these storage bins work as the insecticide and coolness of the clay keep the temperature of the storage bins lower than the containers made of other materials. The structure of the storage bin has 2 openings; one at the top to pour the fresh crop and other near the base to take out the grain or pulse for day-to-day consumption. Both the openings are suitably covered with lids. Depending on the aesthetic ability of the women, artistic figures and drawings with earth colour and line are done on the outer sides of these bins.

Utility items

Terracotta containers with painted moulded designs of variety of shapes and sizes are made all over the
Fig. 13 Wheel  
Fig. 14 Pressing added strips  
Fig. 15 Hatere potter  
Fig. 16 Joining different parts

Fig. 17 Terracotta block  
Fig. 18 Clay images  
Fig. 19 Sculpture  
Fig. 20 Mother & child  
Fig. 21 Horses

Fig. 22 Aijannar shrine  
Fig. 23 Clay, cane and husk  
Fig. 24 Roof tiles with birds

Fig. 25 Contemporary plaque  
Fig. 26 Terracotta tiles  
Fig. 27 Mulela plaque
world. Now a days, most of the clay items and storage containers have been replaced by metallic containers. However, earthen pitchers and surahis are still used for storing drinking water. There is a peculiar container for keeping oil and ghee, which has a funnel like opening at the base to pour the liquid, which collects in the bulbous circular body and can be poured out from a sprout holding the pot with a handle.

Beads and jewellery
Terracotta beads have been found in various excavated sites in pro-historic, proto-historic and historic periods. Bead jewellery has again come into vogue in contemporary fashions.

Miscellaneous forms
Clay mixed with other materials has been extensively used as the core model and upper layer for making a metal images by lost wax process. The basic shape of the form is designed in core clay, which wrapped with sheets or threads of wax. The wax layer is covered with an upper layer of clay with funnel opening and channel for pouring out and draining out the wax.

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