

## Begotten of Corruption? Bioarchaeology and “othering” of leprosy in South Asia

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### **Abstract:**

Leprosy is strongly stigmatized in South Asia, being regarded as a manifestation of extreme levels of spiritual pollution going back through one or more incarnations of the self. Stigma has significant social consequences, including surveillance, exclusion, discipline, control, and punishment; biologically speaking, internalized stigma also compounds the disfigurement and disability resulting from this disease. Stigma results from an othering process whereby difference is recognized, meaning is constituted, and eventually, sufferers may be negatively signified and marked for exclusion. This paper traces the history of leprosy’s stigmatization in South Asia, using archaeology and an exegesis of Vedic texts to examine the meaning of this disease from its apparent zero-point—when it first appears but before it was differentiated and signified—in the mature Indus Age. Results suggest that early in the second millennium BCE, leprosy was perceived as treatable and efforts were apparently made to mitigate its impact on the journey to the afterworld. Ignominy to the point of exclusion does not emerge until the first millennium BCE. This paper uses archaeology to create an effective history of stigma for leprosy, destabilizing what is true about this disease and its sufferers in South Asia today.

**Keywords:** Leprosy | Stigma | Othering | Foucault | Mortuary treatment | Bioarchaeology

### **Article:**

#### **1. Introduction**

Leprosy, or infection with *Mycobacterium leprae*, is arguably the most stigmatized human condition in South Asia today (Rafferty, 2005). People with leprosy are excluded from society and from their families; they are restricted to their own specialized settlements outside of human communities, often built along river-banks—spaces that are strongly associated with devotion, ritual, and pilgrimage on one hand (Eck, 1981, Justice, 1997) but death, liminality, and outcaste people on the other (Barrett and Parry, 2008). This marginal locus could be perceived as an opportunity for an enhanced degree of individual agency, as individuals with leprosy may take on a new existence free from expectations, norms, and traditions (Staples, 2014a, Staples, 2014b). However, social stigma is often deeply internalized; as a result, people with leprosy may

not seek or receive treatment for the disease. Therefore, its physical effects may be particularly disfiguring and thus be considered “disabling” (Van Brakel, 2006, Van Brakel et al., 2012).

The stigma faced by people with leprosy is not biologically rational (Rawcliffe, 2006). Most contemporary humans are immune to this disease, with leprosy being expressed in only 5–10% of people infected with *M. leprae* (Britton and Lockwood, 2004, Ottenhoff et al., 2005). It has a very long incubation period and a long latency period before its effects are experienced (Bennett et al., 2008). Prolonged exposure may be required for infection to occur, but it is difficult to be certain, given humans may not develop symptoms for decades after infection (Dayal et al., 1990, Fine, 1984, Madarasingha and Senaviratne, 2011). In addition, the disease is imminently treatable today. Multi-Drug Therapies are effective and would prevent disfigurement if the disease were caught early and treated (Nunzi and Massone, 2012), but these biological facts are moot in the face of a social one.

In the antibiotic era, the extreme level of social suffering associated with leprosy is almost entirely caused by ignorance of the natural history of this disease and a deep level of stigma principally derived from Hindu beliefs about dharma, karma, spiritual pollution, and reincarnation (Kaur and Gandhi, 2002, Raj et al., 1981). Stigma faced by people with leprosy in South Asia today derives in part from a belief that leprosy is a manifestation of extreme spiritual pollution, going back through at least one, if not several previous incarnations of the self (Barrett and Parry, 2008). Although biologically speaking, the disease has low communicability, spiritual pollution is readily contagious for Hindus, transferred through touching shadows or laying eyes on an affected person.

Stigma is the result of an “othering” process whereby difference is recognized, constituted, and signified as negative and potentially harmful; surveillance, control, exclusion and even imprisonment are justified and deemed necessary to avoid contamination. This process is fully explicated in *Madness and Civilization* (Foucault, 1988), where Foucault made the argument that to understand the “othering” process and to write a history of the stigmatization of an illness (he discussed both madness and leprosy in this work), we must start from the zero-point, before illness became differentiated from non-illness, before it was constituted as bad, before its recognition led to confinement.

“We have yet to write the history of that other form of madness, by which men, in an act of sovereign reason, confine their neighbors, and communicate and recognize each other through the merciless language of non-madness; to define the moment of this conspiracy before it was permanently established in the realm of truth, before it was permanently established in the realm of truth, before it was revived by the lyricism of protest. We must try to return, in history, to that zero point in the course of madness at which madness is an undifferentiated experience, a not yet divided experience of division itself. We must describe, from the start of its trajectory, that “other form” which relegates Reason and Madness to one side or the other ... as things henceforth external, deaf to all exchange, and as though dead to one another.” (1988: ix)

To elucidate the history of leprosy stigmatization in South Asia, we must begin at the zero-point—the time before leprosy was recognized, constituted, and signified. We might expect the

zero-point to emerge at a historical moment when the disease was present in a human population, yet people with leprosy were not treated differently or excluded. It might resemble a time when the disease was first recognized but not yet marked with ignominy and subject to exclusion. Furthermore, in an examination of the social relations of those suffering from this disease, we might expect to find subsequent traces of a differentiation process. Eventually, we might locate the moment where stigma and exclusion emerged.

Based on my prior analyses of bioarchaeological and paleopathological data from the Bioarchaeology of Harappa Research And Training (BHaRaT) project, combined with evidence from my analysis of the skeletal material from the Indus outpost of Balathal, leprosy emerges for the first time in South Asian archaeology during the mature period of the Indus civilization (2450–2030 BCE) (see Supplemental Materials). The rise of urbanism and long distance exchange often serve as opportunities for migration of infectious pathogens and the presence of mycobacterial diseases in South Asia toward the end of the third millennium BCE suggest the pathogen potentially migrated along humans' extensive inter-continental exchange networks, becoming established in early urban communities (Monot et al., 2005, Pinhasi et al., 2005, Robbins et al., 2009).

Given that the disease may have entered South Asia at this time, it is appropriate to undertake an analysis of mortuary behavior for affected and unaffected individuals at the Indus site of Harappa and to conduct an exegesis of textual sources, such as written accounts of oral hymns composed between the second and first millennium BCE, to look for traces of the socio-cultural meaning of this disease, the production of difference, and the nature of the othering process. It is hypothesized that this time, when the disease first enters the subcontinent, could represent the theoretical zero-point for leprosy in South Asia.

We also know that the opening centuries of the second millennium BCE represented a moment of crisis, in which political, social, economic and climate changes meant that the human population faced an unprecedented risk of violent injury (Lovell, 2014, Robbins Schug et al., 2012), infectious disease (Robbins Schug et al., 2013, Lovell, 2016), and starvation (Robbins Schug and Blevins, 2016) on a scale that was not seen again until the Colonial moment. In the post-urban period of the Indus Age, interpersonal violence affected 30% of the skeletal population (up from 4% in the urban period). Women and people in marginal burial contexts appear to have been at greatest risk for both violence and disease. Thus, high levels of risk followed the fault lines of inequality that probably initially formed in the context of rapid urbanization.

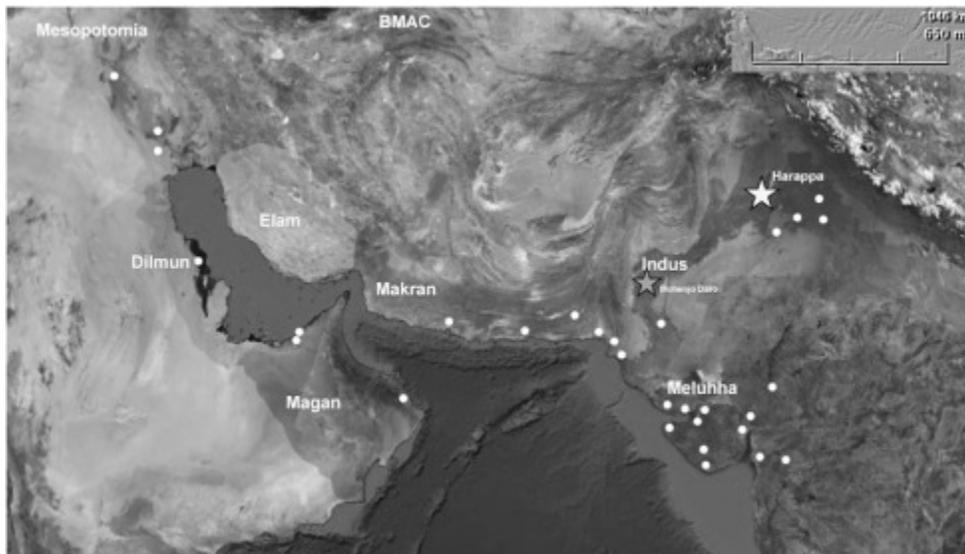
In this paper, I will examine the idea that recognition and signification of leprosy in South Asia coincided with this post-urban period at Harappa, when “societal collapse” and social crisis may have created an opening for an “othering” process to begin during massive restructuring and reorganization. More broadly, this research represents a case study for a larger project to define a bioarchaeology of crisis. Crisis in prehistory, what many pre-reflexively call “collapse” (Diamond, 2005), can be imagined variously as the result of ideological conflict or socio-economic faltering in a vast territory bonded by exchange relationships. The crisis could be thought of as a result of disintegration, or evolving lack of cohesion in a large, heterarchical system. We might imagine it as a chaotic decentralization precipitated by an expansion of

individual agency from its constituents. We could look for a rejection of hierarchical administration that fostered previously unrecognized inequality. Whatever the contours of the crisis, we know that the end of the Indus Age saw a fulfillment of entropy, with a massive emigration away from Indus cities, a nihilistic attitude toward maintaining Indus traditions, script, or standards, and a wholesale rejection of urbanism in the subcontinent for more than a millennium. However this civilization came to its end, no doubt due to a variety of contributing factors, my goal here is to trace how the meaning of leprosy also changed in this period, thus elucidating the recursive dynamic between crisis and culture change from the zero-point of leprosy to its status as the deepest mark of corruption.

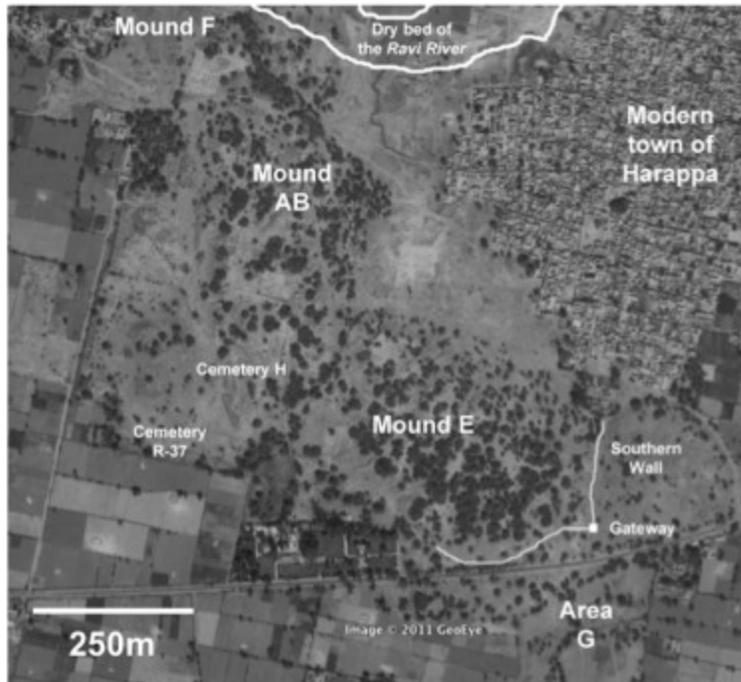
## 2. Material and methods

### 2.1. The city of Harappa

Harappa is located on the southern bank of the Ravi River, a tributary of the Indus (Fig. 1). The city began around 3300 BCE as a relatively small settlement on what archaeologists call “Mound F”, which is located directly on the ancient riverbank at the northern edge of the site (Fig. 2). In the Integration Era, period 3C (2200–1900 BCE), the city’s population grew to more than 30,000 people, and the built environment expanded southward as large residential and administrative centers were constructed on Mounds AB and E. This time period is known as the Integration Era because it witnessed the integration of social and cultural features across a vast territory of almost one-million square kilometers, the founding of a large number of cities characterized by heterogeneous populations of specialists, and the development of an interaction sphere spanning West Asia, the Arabian peninsula, and indirectly, the Mediterranean World (Kenoyer, 1998, Lahiri, 2000, Possehl, 2002, Shaffer, 1982, Wright, 2009).



**Fig. 1.** The Indus Civilization and the Third Millennium BCE Interaction Sphere.



**Fig. 2.** The City and the Ancient Site of Harappa.

This period of expanding Harappan influence was followed in quick succession by a period of time called the Localization Era (Kenoyer, 2004, Shaffer, 1992). After two hundred years of commercial and demographic expansion, which was co-incident with 200 years of increased aridity and climatic changes across the Interaction Sphere, the Harappan civilization came to an end. The “collapse” occurred over a span of a few hundred years as well, as the urban populations were decimated, the cities once famous for their sanitation facilities and settlement planning became increasingly disorganized and haphazardly maintained. Many settlements were abandoned.

## 2.2. Mortuary archaeology at Harappa

There are three mortuary areas at Harappa: cemetery *R-37*, cemetery H, and Area G (Fig. 2). Rai Bahadur Daya Ram Sahni, who excavated Mounds F and AB for three seasons between 1920 and 1925, was the first to investigate the site of Harappa in a systematic manner. Most of the human skeletal remains considered here were uncovered during the subsequent excavations led by M.S. Vats, from 1926 to 1934 (Vats, 1940). Vats discovered a large number of burials because he was uniquely interested in excavating the low-lying areas of the site, off the main habitation mounds. This interest led him to discover smaller mounds (D), the low-lying Area J, and importantly, the burials in cemetery H and Area G (Vats, 1926, Vats, 1928, Vats, 1929, Vats, 1934, Vats, 1940). Vats also worked on Mounds F and AB, where he discovered a secondary burial (jar 3686) in the Northern part of Trench I on Mound F (Vats, 1926:104) and some isolated human remains on Mound AB (H5440a, b, and c), which were 3 to 4 m below the soil surface at the southern end of the mound (south of trenches I and II), just north of cemetery H (Vats, 1928).

Cemetery H was in use during the Localization Era at Harappa, with two strata spanning 1900–1300 BCE (Vats, 1940). At cemetery H, Vats found 16 extended burials in stratum II and 135 pot burials in stratum I. Stratum I was more recent (1700–1300 BCE) and thus excavated first. Vats uncovered 18 burial jars in 1927-28, seven more in 1928-29, and 110 additional burials in 1929-30. During excavations from 1930 to 31, he uncovered the remains of another 45 burials in Stratum II (1900–1700 BCE). Grave goods were very limited in this cemetery. Pottery was provided for the dead, but in small quantities and limited variety compared to the urban cemetery (*R-37*). Animals, parts of animals, and animal bones were placed in some burials from Cemetery H, something that was absent in Cemetery *R-37*. Vats describes evidence for animal sacrifice in one burial (H698) and animal remains in seven other burials (H88, 184, 307, 484, 488, 501 and 502) (Vats, 1940:221).

Area G was excavated from 1928 to 29 and again from 1929 to 30; three trenches were excavated (Vats, 1940). Trenches I and III were sunk in the northern portion of the site, near some “fragmentary walls of poor technique” (Vats, 1929). It appeared to Vats that this area may have represented a garbage dump because 5–7 feet of ashes, potsherds, and terracotta nodules covered this site. Below this ‘trash’ deposit, in trench II, there was a layer of soft alluvial soil. In this layer, “typical” Harappan artifacts were recovered, including terracotta figures of a woman and a pair of human feet, as well as 31 cylindrical terracotta seals depicting the ubiquitous unicorn, among other images. A well was also discovered in the alluvium at the southern edge of this trench. One hundred and forty feet to the north, an ossuary contained 20 crania, a partial skeleton and isolated post-cranial remains. The dating of these remains was solely based on the presence of “typical Harappan pottery” included in the ossuary (Vats, 1929, Vats, 1934), and it has been attributed to a transitional period between the Integration and Localization Eras.

K.N. Sastri discovered cemetery *R-37*, and he excavated in this cemetery with H.K. Bose for four seasons from 1937 to 41 (Sastri, 1957). Sastri excavated 57 graves in cemetery *R-37*. Eighteen of these were disturbed, eight cut by two intrusive burials. All of the burials Sastri excavated were oriented north-south (with the head placed within 4 ° of magnetic north) except for one, with the head oriented south. The graves in cemetery *R-37* were between 10 and 15 feet long. They ranged from 2.5 to 10 feet wide to accommodate ceramic grave goods, which varied in number from 2 to 40 pieces.

Personal ornaments accompanied the dead in this cemetery, including steatite bead necklaces, anklets of paste beads, copper earrings, shell bangles, a copper ring, mother of pearl shell, antimony, a shell spoon, and copper mirrors. The mortuary traditions in the urban cemetery also included provisioning the dead with large quantities of pottery for both water and food. Most vessels were placed near the head, rarely alongside the body, and only occasionally at the feet. Forty-five types of pottery were recovered from the cemetery. Most were similar to the types found among habitation mound pottery, but a few ceramic forms were unique to the funereal assemblage. Interestingly, the ceramics in cemetery *R-37* differed from those of the later cemetery H due to their painted designs. A bird figure was the dominant motif, but trees, leaves, geometric, and “floral” designs were also observed. Sastri described the bird as a peacock and the trees as pipal and acacia, a tree presently associated with knowledge and known as the tree of life (Sastri, 1957:56). The motifs common in the cemetery H period, stars or rayed orbs, bulls, lotus, and goats, were rarely depicted in the urban period cemetery.

I also studied a small number of burials uncovered by Wheeler in 1946 when he excavated Mound AB, discovering the monumental architectural feature he described as a “citadel” and uncovering an additional 10 burials from cemetery R-37 (numbered skeletons 1–10) and three pot burials from cemetery H Stratum II (Pots 11, 12, and 13) (Wheeler, 1947).

For this project I have considered information about mortuary archaeology from these published sources: photographs included in the site reports, monographs, and published papers. Ideally, additional excavations at the site of Harappa, particularly in cemetery H, will test the ideas presented here. Although Harappa has been excavated more recently during the Harappa Archaeology Research Project (1986–1990), investigators chose to conduct bioarchaeological investigations in the urban cemetery (R-37) and no additional work was performed in the burial areas that later proved more interesting in reference to the biocultural and biosocial aspects of crisis and collapse (cemetery H and Area G). Through a detailed investigation of the archaeological record, in combination with data from more recent paleopathological investigations (Robbins Schug et al., 2012, Robbins Schug et al., 2013), it is hoped that new hypotheses will be generated that can then be tested in the course of further excavations at this and other Indus sites.

### 2.3. Exegesis of textual sources

For this project, I examined relevant passages from the *Rg Veda*, *Atharva Veda*, *Vaastu Sastra*, and *Manava Dharma Sastra* (Bloomfield, 2007, Menon and Haberman, 1969). For a historical perspective on the trajectory of stigmatization later in Indian history, I used passages from the *Charaka Samhita* and the *Sushruta Samhita*. The Dharmasutras, or *Vedas*, are ancient scriptures—hymns composed in Sanskrit from 3000 to 1000 BCE—which contain clues to the knowledge and beliefs of South Asian people (Menon and Haberman, 1969). There are four books—the *Rg*, *Atharva*, *Yajur*, and *Sama Vedas*. The *Rg Veda* is primarily about religious ideology and scripture, the *Atharva Veda* being primarily concerned with medicine, superstition, philosophy, rituals, ethics, and scientific observations about health and other bodily concerns.

The *Vaastu Shastra* (or theory of dwelling) also derives from Vedic hymns composed in the second millennium BCE (*Sthapatya Vedas*). It concerns a doctrine of orientation, describes spiritually sound principles of site planning, canons of architecture, and aesthetics. It is discussed in this paper in light of its contribution to proto-historic ideas about the body and the embodiment of spiritual pollution. The *Manava Dharma Shastra* (*Manu Smirti*, or “Laws of Manu”) mentions leprosy as well. This text was composed some time between the 2nd millennium BCE and the Early Historic Era, but the precise timing is not known.

The *Charaka Samhita* is based on the hymns of Agnivesa, which were composed c. 1000 BCE and were revised and redacted through 200 BCE. This text describes thoughts from the Iron-Age of South Asia on anatomy, pathology, and topics related to treatment and pharmaceutical care. The *Sushruta Samhita* was composed around 600 BCE and covers topics also considered in the *Charaka Samhita*. The latter text does add a doctrine on surgery: amputations, caesarian-type sections for assisting in birth, lithotomy, other obstetrical procedures, ophthalmological procedures, and rhinoplasty.

Prior to describing these translations as they pertain to leprosy, it is worth noting that the texts used in this paper are transcriptions of hymns that were composed beginning in the second millennium BCE and passed down orally for centuries before they were written down and later translated into modern languages, including English. Thus these Vedic texts reflect a “big tradition” understanding of religious doctrine, diseases and their meaning or treatment during a period of time synchronous with the post-urban phase of the Indus tradition, but this does not mean that Indus people authored these hymns or that they fully reflect the “little traditions” of life during that time.

The reader is also reminded that descriptions of diseases in ancient texts are problematic (Cunningham, 2002; Mitchell, 2016 in press; Stein, 2014). We can never be entirely certain of the diagnosis; references to “leprosy” might not in fact, be referring to infection with *M. leprae*. An additional difficulty comes from that fact that this analysis is based on translations of the original Sanskrit, a difficulty perhaps mitigated by choosing the authoritative translation by Maurice Bloomfield rather than a more recent but possibly less reliable translation.

Obviously, working with ancient oral traditions, later inscribed and even more recently translated presents semiotic and hermeneutic challenges as well (e.g. what does the text mean and how can we understand that meaning across cultures and time). Nonetheless, combining evidence from textual sources and mortuary archaeology is a powerful method for creating an effective history, even if it is not a perfect representation of the past. Some might even argue that if the textual sources are available, they should be a key source of evidence about past lives because these sources provide a rich social context (Mitchell, in press). References to leprosy in ancient texts, even if they include infections by other pathogens, may tell us something about the “social diagnosis”, social conventions, and ideological stances toward this type of infection at this point in time (Mitchell, 2011 in press; Rawcliffe, 2006).

### **3. Results**

#### **3.1. Mortuary behavior and social relations at the “zero-point”**

What can mortuary treatment tell us about the social relations of leprosy in the Indus Age and about the origins of stigma? An examination of the archaeological record for two cemeteries at Harappa suggests some intriguing insights about the social relations of people with leprosy during this time. Two skeletons from Cemetery R-37 had lesions consistent with leprosy (779c and 820), and one of these appeared to have evidence of skeletal trauma (820), although the lesions were associated with parietal thinning and their precise etiology was unclear without more advanced imaging (Robbins Schug et al., 2012). These individuals were buried in common (or shared) graves, which was not the usual practice in this cemetery, as only 5 of the excavated graves were shared. I underscore that this was not an interment practice limited to skeletons with traces of violence or infectious disease.

Other than sharing graves with other adults and immature individuals, people with leprosy in cemetery R-37 were not marked as different. People with leprosy were buried with others not so affected. They were not excluded. The location of their graves, orientation and posture of the

body, number and type of grave goods were all within the range of variation for unaffected individuals. The disease was not recognized through archaeologically visible differences in mortuary treatment, it was not archaeologically signified, and it was not stigmatized in any archaeologically visible way. Thus, the urban period at Harappa may represent not only the period when *M. leprae* entered the subcontinent, but it may also represent a zero-point (Foucault, 1988) in the history of the stigmatization of this disease.

Through time, mortuary behavior at Harappa changed. However, burial orientation, posture, and grave goods for affected individuals do not differ significantly from the graves of unaffected individuals in Cemetery H. In this localization era cemetery, two individuals demonstrated lesions consistent with a diagnosis of leprosy (H488 and H696). H488 also had a circular depression fracture of the frontal bone, which was in an advanced stage of healing (described in Robbins Schug et al., 2012, Robbins Schug et al., 2013; supplement). Both of these individuals were buried in an extended supine posture with arms parallel to the body (Vats, 1940: 221–222, Plate LIa and LIb), which did not depart from the range of variation seen in unaffected individuals. Burial H488 was positioned Northeast to Southwest. “It was fully stretched and better preserved than others. The feet were missing, The head with gaping mouth lay on the cheek and arms alongside the body. Like skeleton No. 485, it was also laying on its back. No pottery was found in this case. About a foot from the head of this lay a lump of animal bones (H507) including some teeth and a kalasa covered with a flask (H508)” (Vats, 1929-30:130).

In the case of burial H696, the burial was oriented East-Northeast to West-Southwest. “Skeleton H696 was buried at a depth of 2’6” below the datum with two medium-sized, round, open-mouthed vases, (H696a-b) with ring bottoms, placed towards the head side (plate XXVI, b). Both the vases were closed with flasks of the kind usually covering either kalasas or found in bowls. Both of them are painted at the shoulders with sets of leaves and V-shaped doubled slanting strokes enclosing an 8-shaped figure (Plate XXVII, a centre) the skeleton was lying on the left side with bent knees, the right leg being placed over the left one. The left arm was placed parallel to the body, while the right was bent at the elbow and crossed over the thorax and the hand placed over the left humerus. The middle portion of the skeleton is missing” (Vats 1930-31:75). From the plates in the excavation report (Vats, 1940: 221–222, Plate LIa and LIb), it is clear that the feet are also missing, although two foot bones were present in the skeletal repository. It is unclear from the description and the photograph where within that grave these two foot bones were located, but they are clearly not in situ in the photograph.

There was only one significant difference in the burials of individuals affected by leprosy compared to unaffected individuals. Both of these individuals were missing their ankle and foot bones in the excavation photos (see Fig. 3), in the descriptions in the excavation reports, and in the osteological collection. The distal tibiae, fibulae, and hand bones were present in the photographs, but these were not present in the repository. While this evidence is strongly suggestive, one cannot examine the bones for signs of amputation. The excavators reported no sign of postmortem disturbance to the graves, but it is not possible to conclude that the feet were removed prior to burial. There is, however, no evidence that these burials were disturbed, and the photographs demonstrate that none of the foot bones, even the smallest pedal phalanges, were present upon excavation.



BURIAL NO. H 695.



BURIAL NO. H 696.

**Fig. 3.** Burials from Cemetery H, Localization Era. Individual H.695 (left) was skeletally unaffected by leprosy; Individual H.696 (right) was skeletally affected by leprosy. (Image from Vats, 1940: Plate LI).

One additional line of support for the hypothesis that this removal represents a mortuary practice is that hand and foot bones were not missing for any of the individuals who were skeletally unaffected by leprosy. Additionally, it is interesting to note that “missing feet” is a persistent feature in excavation reports for sites across South Asia after the second millennium BCE. It would be worthwhile to undertake an investigation of those sites as well for paleopathological signs of leprosy. Based on the mortuary behavior at Harappa, I hypothesize a connection. I argue that this explanation warrants further investigation based on my reading of Vedic texts presented below. The hypothesis must be tested by additional excavations at Cemetery H at Harappa and at synchronous or later cemeteries in South Asia. Here I simply propose the hypothesis that the feet were missing from these burials because leprosy was recognized as different for the first time in the localization era cemetery at Harappa and I propose the following analysis provides additional support for this suggestion.

### 3.2. Begotten of Corruption? A textual reading, the body and the burial

It is interesting to note that the feet were the part removed from the body of people with leprosy in the cemetery H burials at Harappa. In the *Rg Veda*, four social strata are described (which later provided a basis for the four *varna*). The first man, the *Purusa*, was divided anatomically and by grades of purity into the mouth (*Brahman*), the arms (*Rajanya*), the thighs (*Vaisya*), and the feet (*Sudra*). While it is not clear that in Vedic literature these divisions were so rigidly defined as the concept of caste, they are seen by some Sanskritists as representing the seeds of social inequality in South Asia (Jamison, 2014). The beginning of the second millennium BCE saw the sowing of these seeds. Thus, the feet represent the most polluted part of the person, as they are the body part most affected by disease (aside from the face). The feet also symbolize the lowest stratum of

society, the working class *Sudra*, who are eventually forbidden from accessing purity or a spiritual life at all.

At Harappa, the cemeteries and deposits of human remains are located Southeast and Southwest of the city. Bodies are oriented North to South, with the feet to the South. According to the doctrines of the *Vaastu Shastra*, good and orderly directions are to the North and the East. The entrances to places should face East, a direction associated with enlightenment, or North, a direction associated with prosperity. This doctrine was also heavily concerned with the body, the head being associated with the right orderliness of the North and the East and anything associated with pollution or excrement oriented to the South or West. As it applies to the body, the anus and the feet should ideally be oriented to the Southwest. The feet in particular, are a part of the body considered so spiritually polluted that corruption can be transmitted through touch, or even by sight of the feet.

Early archaeologists working in South Asia, such as Andrew Cunningham, were quick to draw parallels between Indus archaeology, including Harappan settlement patterns, and Vedic traditions, such as *Vaastu Shastra*. This approach has been attempted by numerous scholars with varying degrees of success for almost a century (see reviews in Bryant et al., 2004, Danino, 2003, Danino, 2016, Erdosy, 1995, Kenoyer, 2004, Lal, 1998). Vedic concepts, including those of the *Vaastu Shastra*, do not strictly map onto Harappan space (Kenoyer, 2004), and that is not my intention. However, these concepts were present in the human communities that lived in the Indus Age of South Asia, and I observe that in burials of people with leprosy at Harappa, the feet would be located in a southerly direction but they are not present. This is interesting both in light of biology, as the feet are one part of the body strongly affected by leprosy due to the effects of peripheral neuropathy (Van Brakel et al., 2012), and in light of cultural ideologies and traditions that emerged in South Asia not long after the Indus Age, which regarded the feet as vehicles of pollution and which deliberately oriented “necessary pollution” to the Southwest.

It appears possible that the feet were excluded from these burials because their diseased state was thought to affect the fate of the dead, the degree of their separation from the living, and how readily that will occur. If the dead were offered as sacrifice to the Gods in prehistoric India, perhaps feet were removed to prepare the body as a more proper offering. Alternatively, perhaps their removal actually facilitated the afflicted’s journey to an afterworld. In some cases, deviant burial has been interpreted as a way of preventing post-mortem agency (e.g. Sledzik and Bellantoni, 1994) or as a means to protect the living from the potential restlessness of a person who had died a “bad death” (Seale and van der Geest, 2004).

Also relevant is my previous work on leprosy at the rural Indus outpost of Balathal, where a middle aged man with leprosy was uncovered inside of a stone enclosure 500 m square constructed at the Northeastern edge of the village during the Indus Age, circa 3300 BCE (Robbins et al., 2009). The walls of this stone enclosure are 6.5 m thick at the base and they rose to a height of more than 4 m (Misra, 1997, Misra et al., 1995). There are three well-made floor levels inside the structure, which was filled with 13 layers of burned and vitrified cow dung ash. The skeleton of the man with leprosy was buried below layer 5, associated radiocarbon dates suggesting he was interred between 2000–2500 BCE.

This mode of interment is unique in Indian prehistory. The most striking feature, the meters-deep vitrified cow dung ash, is interesting in light of Vedic traditions because cow dung is the single most pure substance on Earth (Simoons, 1974, Wadley, 1980). His interment within these layers may provide some support for the hypothesis that by the end of the second millennium BCE, attempts were being made to provide special ritual care and individualized mortuary treatment for people with leprosy, aimed at purifying or otherwise ameliorating the effects of this disease. Leprosy was now recognized and it was signified as a manifestation of impurity. It does not seem to have been a basis for exclusion and thus does not seem to have been stigmatized at this point of time.

In the *Atharva Veda* (hymns composed c. 2000 BCE), we find additional support for the hypothesis that leprosy was seen as a kind of pollution but one that was treatable and thus potentially not deserving of a permanent kind of sanction, or stigma. Leprosy (*kustha*, or *kusnati iti kustham*) and its disposition is described as follows:

Born by night art thou, O plant, dark, black, sable. Do thou, that art rich in color, stain this leprosy, and the gray spots! The leprosy and the gray spots drive away from here—may thy native color settle upon thee—the white spots cause to fly away! Sable is thy hiding-place, sable thy dwelling-place, sable art thou, O plant: drive away from here the speckled spots! The leprosy, which has originated in the bones, and that which has originated in the body and upon the skin, the white mark begotten of corruption, I have destroyed with my charm. (Bloomfield, 2007: Book I, Hymn 23)

In the *Atharva Veda*, *kustham* refers to skin diseases that are treated with an herb by the same name (Sinha et al., 2010). The word means inner bark of a tree and according to Sinha and colleagues (2010), it derives from the notion that the extremities will undergo putrefaction, mutilation, and absorption. In the passage above, leprosy is signified as a manifestation of a corrupt spirit and a sign of spiritual pollution. Importantly, the disease is also deemed to be curable. The manifestations of this corruption can be mitigated through human agency and the spiritual pollution destroyed through the application of a plant, *Cestus speciosus* or *Cestus arabicus* (Rastogi and Rastogi, 1984), to the surface of the skin along with the use of specific charms and incantations by a spiritual provider. In Hindu tradition today, the concept of karma can be strategically invoked to indicate that good deeds and right practices can ameliorate the spiritual implications of disability (Gupta, 2011). Perhaps, the removal of the feet at Harappa, or burial in cow dung at Balathal could represent the concept of restoring spiritual purity to the sufferer, archaeological manifestations of an attempt to ameliorate the impact of this disease.

This passage indicates that the skin diseases called *kustham* (including leprosy) were considered to be ‘begotten of corruption’ as early as the second millennium BCE. They were associated with specific treatments, and amelioration was thought possible and desirable at this time (Dharmendra, 1958, Rastogi and Rastogi, 1984, Sinha et al., 2010).

In the next passage, the origins of this disease are described.

The eagle (suparna) that was born at first, his gall thou wast, O plant. The Âsurî having conquered this (gall) gave it to the trees for their color. The Âsurî was the first to

construct this remedy for leprosy, this destroyer of leprosy. She has destroyed the leprosy, has made the skin of even color. 'Even-color' is the name of thy mother; 'Even-color' is the name of thy father; thou, O plant, produces even color: render this (spot) of even color! The black (plant) that produces even color has been fetched out of the earth. Do thou now, pray, perfect this, construct anew the colors! (Bloomfield, 2007: Book I, Hymn 24)

This passage brings up the concept of Suparna, the eagle, who in *Rg Veda* is described as a sun-bird, known for strong wings and sharp eyes, a figure who is a representative on Earth of both Indra, the King of the Gods, and Agni, the God of Fire. Suparna is also associated in the *Rg Veda* both with Varuna, the God of law and water, and Yama, the God of death. The cure for leprosy in this passage, the dark plant, came from the body of Suparna and was given to Earth by the Asuras, demons who compete for power with the benevolent deities (the Suras). Thus, the marks of disease (changes in skin color) were removed from the human body by the plant, whose dark color came straight from the body of Suparna. The plant restores the "evenness", the homogeneous consistency of color, to the skin and an "evenness" of purity to the spirit.

It is much later that stigma seems to emerge, with the composition of the *Manava Dharma Shastra* (*Manu Smirti*, or Laws of Manu). Here, leprosy is mentioned, primarily in regard to preventing the disease or regulating those affected to avoid transmission. Manu's code lists physical conditions that should be avoided when arranging a marriage: those with no male children; who do not adhere to the *Vedas*; who have thick body hair, no hair, or red hair; who have reddish eyes; whose members are garrulous or sickly; or whose members suffer specifically from hemorrhoids, poor digestion, epilepsy, tuberculosis (phthisis), or leprosy (Chapter III, verses 7–8). Other suggestions about suitable, marriageable families suggest avoiding those named after a constellation, tree, river, mountain, bird, snake, a slave, or one "whose name inspires terror" or resembles that of a low caste. Clearly there is much more at stake in the cultural milieu of the Vedic people than health and biological concerns, but by approximately 1000 BCE leprosy (and tuberculosis) was considered important enough to be included in this list of undesirable qualities. Madness, leprosy, and loss of virginity were states of being that had to be declared before a marriage could be arranged, otherwise the father of the bride-to-be risked social sanction or punishment.

In the *Chakara Samhita* there are two chapters on skin diseases, leprosy being considered primarily a disease of the skin. By 1000 BCE when it was written, such conditions were thought to arise from a combination of causes.

"The constant use of mutually incompatible food and drinks, of fatty liquid and heavy articles of diet; the suppression of the urge for vomiting or other calls of nature; indulgence in exercise or exposure to heat after a surfeit meal; irregular indulgence in cold or hot food or fasting or overeating; using cold water after suddenly being afflicted with heat; fatigue or fear; wrongful administration of the five purificatory procedures; habitual use of new grain, curds or fish; excessive use of salt or sour food; sex act before the ingested food is digested; the persecution of wise men and elders; and the committing of sinful acts. These factors act by affecting the three basic principles whose imbalance then vitiates the skin, blood, flesh and body fluids. This is the complex of the seven body

elements affected in dermatosis. As a result of such derangement, eighteen types of dermatoses are produced. Dermatosis is never the result of the discordance of a single humour.” (Menon and Haberman, 1969)

This text is focused primarily on proximate, physical causes, describing leprosy as a disease of the skin but also of the nervous system (Dharmendra, 1958, Dharmendra, 1978). In this text, leprosy or *Maha-khushta*, the loss of the sense of touch accompanying leprosy, was characterized by the appearance of red blotches on the skin, sinking of the nasal bridge, pricking sensation in the extremities, loss of sensation, anesthesia, ulceration, and deformity of the limbs. The origins of the disease are attributed by Dhanvantri to various causes, including the following.

“...faulty diet and behavior particularly eating heavy, incompatible, unsuitable and unwholesome items and indigestion; or indulging in physical exercise and sexual intercourse after intake of unctuous substances or emesis; or frequently eating meats of domestic, marshy, and aquatic animals with milk; or taking dip in water after having been heated by fire (or the sun); or by suppressing vomiting suddenly, increasing *vayu*...” (Sinha et al., 2010:3)

In other words, in the *Sushruta Samhita*, the disease was caused by suppressed desires or foods and behaviors that are used inappropriately, used excessively, or combined in unusual ways. However, this text also mentions the disease is heritable and stems from sins committed in a previous incarnation, specifically stealing or killing of Brahmins, women, or saints (Sinha et al., 2010). It was thought to infect the sperm and eggs of sufferers (Rastogi and Rastogi, 1984). If the disease was present at death, it would follow one to their re-birth (Rastogi and Rastogi, 1984, Sinha et al., 2010).

By this time, chaulmoogra oil was recommended for treatment, to be consumed and rubbed on the affected body parts. Practitioners of Western medicine recognize this ancient Ayurvedic remedy as effective for amelioration of leprosy symptoms, and it is still widely used in India, China, and Burma (Parascandola, 2003). *Tuvarak* oil, which is known to have weak bacteriostatic properties, was also prescribed (Sinha et al., 2010). Surgery on affected parts was also recommended, both amputation and cosmetic surgery (rhinoplasty).

The etiology of leprosy was also described as a derangement of the body’s balanced humors, in this case, derangement of the *Vayu*, or nerve force specifically. According to this text, the disease is communicated by touch, by breath, or close physical association with an affected individual and the disease is considered highly communicable (Parascandola, 2003, Sinha et al., 2010). Finally, it is in this Early Historic period text that we find leprosy is strongly stigmatized: a divine retribution for acts like killing a Brahmin, a relative, or a woman. By this time, leprosy is associated with criminality and seen as an incarnation of bad acts in a previous incarnation.

The correlation between textual and mortuary traditions at Harappa is complicated by the fact that the majority of skeletons that demonstrate traces of leprosy were not interred in cemetery R-37 or H. They were interred in an area south-east of the city wall in an ossuary from a transitional phase between urban and post-urban periods, known as Area G. These individuals

were excluded from the cemetery (Vats, 1940). Of the minimum number of 23 individuals in this ossuary, four crania were affected by skeletal changes in the rhinomaxillary region, which are typical of leprosy, including resorption of the anterior nasal spine (Robbins Schug et al., 2013). Postcranial elements of two individuals were affected by periostosis of the tibia and fibula and changes to the tarsals.

The individuals buried in Area G may also have had a greater risk of interpersonal violence (Robbins Schug et al., 2012). Healed broken noses and other signs of violent injury and subsequent infection affected two male crania. One female with traces of *M. leprae* infection presented blunt force trauma to the cranial vault; of several children, two 5-year-olds showed evidence of cranial trauma.

It is unclear what the remains in Area G represent. These are individuals who were not buried in the two formal cemeteries, but the rationale is unclear. They may represent evidence for exclusion. However, given that there were individuals in cemeteries R-37 and H who had leprosy, I have argued that some other aspect of identity led these individuals to be interred here (Robbins Schug et al., 2013). Additional research is required to address the question of whether there is evidence for a distinct regional identity among this group (through isotopic analysis), how these individuals are connected to the city (through further excavation in this area), and to establish more precise chronology for these interments (through radiocarbon, or AMS, dates). Here I emphasize that the argument developed here applies only to the cemeteries, with interpretations of Area G ongoing.

Furthermore, I propose a relationship between skeletons that have traces of skeletal leprosy and a particular mortuary behavior. In other words, those for whom the disease had impacted the skeleton received treatment apparently different from those for whom the disease had not left traces on the skeleton. This is interesting in light of a distinction made in a later Hindu text, the *Caraka Samhita* (composed circa 78 CE) wherein seven different varieties of leprosy were described, only one of which (*kakanaka-kustha*) was not treatable. If other individuals in this cemetery were infected by *M. leprae* and if those who would bury them recognized their condition, it might be that different treatment was provided based on different conceptions of the disease, its manifestations, treatability, and degree of pollution.

Also relevant is the comment in *Atharva Veda* that leprosy has its origins in the bones, in the body, and on the skin. Clearly, not everyone with leprosy would have been skeletally affected, and there may have been people buried in Cemetery H at Harappa who had leprosy but their bones showed no trace of disease. Skeletal assemblages are not direct representations of living populations in a large variety of ways, with which paleopathologists are intimately familiar (Wood et al., 1992, DeWitte and Stojanowski, 2015). If additional excavations are conducted, or if pathogen DNA can be recovered from apparently unaffected individuals, this new evidence may clarify the situation.

#### **4. Discussion**

This paper considers a bioarchaeology of crisis and specifically, how a period of crisis in the past—at the end of the Indus civilization—might have opened a space for the construction of difference and set a trajectory of stigmatization for people with leprosy in South Asia.

As Foucault cautioned in “The Hermeneutics of the Subject”, when approaching the Oracle at Delphi or in trying to understand the past, we may not ask too much (Foucault, 2005). The oracle’s inscription, *Meden Agan* (or “not too much”), can be taken to mean, “When you question the past, examine yourself closely, and know the questions you will ask. Since you must restrict yourself to the fewest questions and you may not ask too many, carefully consider yourself and what you need to know” (2005:4). Dilemmas about how to enter the hermeneutic circle are not limited to archaeology or to prehistory. Meaning and interpretation, method and truth, are contested in every academic space. Archaeologists face particular difficulty because we try to bridge two dimensions (time and culture). We can, however, rely on ethnographic, historical, and textual sources to establish a common ground for interpretation, and we can attempt objectivity through the use of a scientific method.

The nature of socio-cultural change is expressed in symbolic ways, and these “material vehicles of thought” allows us to uncover the meaningful structure of experience (Throop, 2009). While archaeology may not reveal the “supposed inner state of an actor” (Husserl, 1962), mortuary symbolism and the body as a sign can demonstrate something about the social relations between those actors and their situations (Geertz, 1973). So-called “deviant burials” are those that are marked by difference, including interment in unusual locations or positions, mortuary behaviors that are outside the expected range of variation, or aspects of the burials that suggest necrophobia or special care (Murphy, 2008). I approached the archaeological record with a question about how South Asian culture moved from the zero-point for leprosy, when it was first recognized as a disease, to a time when it was differentiated and eventually stigmatized using mortuary archaeology as my first line of evidence.

Leprosy, as a chronic and disfiguring disease, reveals important information about social relations in the past as embodied over the life course of individuals or through changes in mortuary behavior over long spans of time. Leprosy is an oft used example of the panopticon (Foucault, 1977) in history, as techniques and institutions were established to measure and supervise, discipline and punish sufferers of the disease. However, this process of othering, confinement, and stigmatization did not begin in the colonial era; rather it seems that colonial power in India expressed autochthonous tensions in new ways, rather than introducing new forms of discipline and punishment.

In the historiography of disease in India, there is often a focus on how epidemic disease and periods of crisis expose latent social tensions (Buckingham, 1997, Buckingham, 2002, Harrison, 1994). The archaeological record suggests that the “othering” process for people with leprosy began shortly after the introduction of the disease in the Indus Age. The period of crisis at the end of the Indus Age (the Localization Era, 1900–1700 BCE) opened a space for this disease to become recognized and treated differently in South Asia. By the Localization Era, people with leprosy at Harappa and at Balathal were singled-out for specific mortuary practices that may have represented an attempt to “care” for the sufferers of this disease, thus mediating, modifying, and exerting new forms of control over their journey to the afterworld. An analysis of Vedic

texts confirms the disease was differentiated and associated with spiritual corruption by the mid-second millennium BCE, but stigma and exclusion were part of an “othering” trajectory, that began in the post-urban period at Harappa.

## **5. Conclusion**

By examining the shifting material symbolism of mortuary behavior at the zero-point of leprosy and by integrating textual evidence on the meaning of the disease and the “othering” process for its sufferers, bioarchaeology can consider specific diseases beyond their relationship to health. Here, I attempt to trace the trajectory of stigmatization for people with leprosy in South Asia. Put in the larger context, it is clear that during the second millennium BC, in this moment of climatic changes, social, economic, and political disruption, leprosy as a disease experience was first constituted and attempts were apparently made to mitigate its effect on the dead during their journey to the afterworld. As the Indus civilization became more and more diffuse and urban life was abandoned for a millennium, Indus people returned to provincial and relatively conservative villages. During this hiatus between the urbanism of the third millennium and the New Urbanism that arose toward the end of the first millennium BCE, we see an important shift in the oral traditions about people with leprosy.

At the end of the Indus Age, at Balathal and Harappa, and in the earliest Vedic traditions, we find people with leprosy were afflicted but considered treatable. Their bodies were salvageable through medicinal treatment and their spirits could be purified with incantations. By the Iron age, in oral traditions composed in the first millennium BCE, people with leprosy could not be salvaged. Like the Indus city, they were abandoned. Stigma emerges in full force as people with leprosy were excluded even from their families; they were regarded as incorrigible manifestations of deep corruption, which had begun in their previous incarnations. The city eventually recovered from the stigma associated with urbanism, but South Asian people with leprosy never have. Bioarchaeology though destabilizes the essentialist concept that people with leprosy are and always have been stigmatized and othered.

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## **Appendix A. Supplementary data**

Supplementary data associated with this article can be found online at <http://dx.doi.org/10.1016/j.ijpp.2016.09.002>.

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