

The muddy semiotics of mud

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Abstract

In North Bihar, mud ensures prosperity for farmers, but also materially signals the lower status from which their wives try to raise the family, even at the cost of risking their own and their children's lives. This article provides a semiotic analysis of mud, an ambiguous material in its physical combination of land and water, a substance with specific gendered and class dimensions, and a symbolic marker whose presence on bodies indexes their socio-political identity. The sensuous relationships that revolve around mud and the prejudices it indexes illuminate meanings of dirt within processes of environmental knowledge and risk. By attending to the semiotic processes through which we understand nature, this article suggests that mud naturalizes the discrimination at the origin of dirtiness. Historical and political circumstances, such as the progressive loosening of the links between caste and occupation, show that mud is not dirt, but it becomes dirt when other kinds of dirt lose their meaning.

Keywords: mud, dirt, semiotics, matter, nature, power, gender, class, caste, discrimination, environmental knowledge, risk

Résumé

Dans le nord du Bihar, la boue assure la prospérité des fermiers, et signale également, sur plan matériel, le statut inférieur auquel les femmes de fermiers tentent d'échapper en élevant leurs familles, et ce au péril de leurs vies et de celles de leurs enfants. Cet article présente une analyse sémiotique de la boue, une matière ambiguë dans sa combinaison physique de la terre et de l'eau, une substance qui comporte des dimensions de classe et de genre spécifiques, et un marqueur symbolique dont la présence sur les corps indexe leur identité sociopolitique. Les relations sensuelles autour de la boue et les préjugés qu'elle indexe mettent en lumière les significations de la saleté au sein des connaissances sur l'environnemental et le risque. En observant le processus sémiotique par lequel la nature est comprise, cet article suggère que la boue naturalise la discrimination à l'origine de la saleté. Les circonstances historiques et politiques, telle l'atténuation progressive des liens entre caste et occupation, montrent que la boue n'est pas saleté, mais devient sale lorsque d'autres types de saleté perdent leur signification.

Mots-clés: boue, saleté, sémiotique, matière, nature, pouvoir, genre, classe, caste, discrimination, connaissance environnemental, risque

Resumen

En el norte de Bihar, el barro garantiza la prosperidad para los agricultores, pero también señala materialmente el estatus inferior desde donde sus esposas intentan criar a la familia, incluso a costa de arriesgar su propia vida y la de sus hijos. Este artículo presenta un análisis semiótico del barro/lodo, un material ambiguo en su combinación física de tierra y agua, una sustancia con dimensiones específicas de género y clase, y un marcador

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simbólico cuya presencia en los cuerpos humanos moldea la identidad sociopolítica de los mismos. Las relaciones sensoriales que giran en torno al lodo, así como los prejuicios que éste conlleva, iluminan los significados de lo sucio en los procesos de conocimiento y riesgo ambiental. Al prestar atención a los procesos semióticos a través de los cuales entendemos la naturaleza, este artículo sugiere que el lodo naturaliza la discriminación en el origen mismo de lo sucio y lo enlodado. Circunstancias históricas y políticas tales como el debilitamiento progresivo de los vínculos entre casta y ocupación muestran que el lodo no es sucio, sino que se convierte en sucio cuando otros tipos de suciedad pierden su significado.

Palabras claves: barro, lodo, suciedad, semiótica, material, naturaleza, poder, género, clase, casta, discriminación, conocimiento ambiental, riesgo

1. Introduction

North Bihar, India, is a place of mud. The many rivers that traverse it recurrently flood, depositing vast amounts of sediment eroded from the youngest and most friable mountains in the world, the Himalayas. It would be a mistake to consider these rivers—the Gandak, Burhi Gandak, Kamla, Bagmati, Kosi, and many others, seasonal but no less mighty—as mere water. As the people who live in their proximity know well, these are rivers of soil, as well of many more animated and inanimate matter, as much as of water.

In the farming communities on the banks of the rivers of North Bihar, life revolves around mud. Mud is an elemental and ubiquitous material, positioned between substances, present across spaces, across people. It is a cherished substance, fundamental for livelihood, known and semantically detailed according to its various features and applications. Yet mud is also deeply ambiguous, connoting labor along, or more generally belonging to, the river, hence it is indicative of class and caste. It is a formless quasi-object.² Boundless, it is a boundary object (Star and Griesemer 1989): mud is the disruption of the ontological distinction between solid and liquid, soil and water, fluid and viscose, plastic and robust.³

This article explores mud and how it speaks to, for, and about the people living around it. What do semiotic relations that involve mud say about our broader relationship to the environmental and social world to which we belong? Mud, at least in North Bihar, is not simply a mix of water and soil. There is more to mud than meets the eye, for it contains and carries social aspirations and biases, oppressive hierarchies, and dreams for a better future. Nor is it a screen onto which society is projected; it has a physical presence whose materiality can hardly be mistaken, and which is still evoked even when invisible and non-existent. It is sign and matter, information and hegemony, consensus and disruption. It adapts and maintains, it is transient and hauling, elevating and sticking. Mud is an agglomerate of facts with values and of values with facts.

In North Bihar, mud *per se* is not dirt, and nor does it pollute. Many types of mud are actually considered clean. Yet, in this specific geographical and historical juncture of social and ecological change, mud serves the political purpose of denoting "dirty" people. Dirtiness, or the political prejudice toward it, causes the mud to be dirt. Literally, physically, and semantically, mud is a lexicon of mobility and adaptability as well as of stagnation and misery.⁴ As a social marker, it empowers, and also inhibits, opportunity and success as well as failure and dishonor. In North Bihar, mud is so powerful that it stirs up life and death at the same time.

Stringing together these aspects of mud prompts the questions of how we engage with things, how we relate their affordances to our dynamic socio-political struggles, and how certain objects are particularly filled with semiotic relationships, which in turn have political connotations.⁵ Mud, as a natural material, intersects with the various axes of social differentiation that cross-cut the people of North Bihar. Additionally, mud

² For Latour, quasi objects are those which are "soft" and "hard" at the same time, which are social, fabricated, constructed as well as natural, real, objective (Latour 1993). Serres also defines the quasi object but in less technical terms. His quasi object is also quasi subject, "tends towards zero" (Serres 1982: 234).

³ Everything, all elements and molecules may change status if temperature and pressure change. Water, for example, is liquid, solid, and gaseous in its different chemical states, but mud is solid and liquid at the same time, like Dr. Seuss' Oobleck (Seuss 1949).

⁴ With lexicon, I am signaling that mud is a set of signs, not just an idiom with multiple meanings.

⁵ On affordances, see Gibson (1979). On semiotic relationships, *interpretant*, and the sign, see Parmentier (1994); Kockelman (2005, 2010a, 2010b, 2011), and Pierce's corpus.

speaks also about its own relevance and about the nature of key semiotic relationships. The different agents of my field-site, through and with mud—different kinds of mud, different degrees of muddiness, different contexts of being muddy—speak about personal relations, social order, political affiliations, belonging, environmental knowledge, livelihood skills, understandings of caste and class, visions of the good life, and more.

This work draws upon ongoing ethnographic research in North Bihar conducted over the last decade, specifically on fieldwork carried out in the districts of West Champaran, East Champaran, Sitamarhi, Madhubani, Supaul, Dharbanga, Samastipur, Saharsa, and Khagaria. Cumulatively, I spent approximately five years there. As an applied anthropologist, I managed a network of local organizations from 2007 to 2008. I returned from early 2012 to late 2015 for my doctoral research. I also visited for a few months in 2009 as UN water expert, and for research in 2010, 2011, and 2017.

In the first section of this article, I encounter mud in the hands of the farmers of North Bihar and look at their close interactions with it.⁶ In the second section, I explore the negative connotation of mud as dirt and pollution, particularly when present on the bodies of people associated with lower castes. In the third section, I further examine the apparent contradiction between mud as negative marker and mud as sign of success vis-à-vis cleanliness as performance of upward mobility. Mud is a sign of success on the body of a male farmer. Cleanliness "from" mud is enacted by middle class women to elevate the family, despite the fact that keeping children free of mud increases their risk of dying. In the fourth section, I use mud to illuminate further social distinctions and discriminations, adding nuances to the categories of political stratification most commonly used in the study of Indian society.

Aiming to put political ecology in conversation with semiotics, this article traces the many and inextricable meanings of mud. It rethinks anthropological definitions of dirt when applied to mud. By undertaking careful studies of how people know and teach the social and environmental worlds around them, we as scholars can better grasp how these practices transmit political biases that result in discrimination (Carrier 2001; Heyman, 2004). In the case of mud, its political bearings start becoming transparent when seen in the light of the modern transformations of caste. It is in the historical context of reproduction and transformation of inequalities that sensory nature fills the cracks of power. Read semiotically, the stickiness of mud pushes us to revise our predominant views of nature as a neutralizer of discrimination and see that it also functions to naturalize and depoliticize discrimination.

2. Labored mud

Rajesh is a farmer I have known for a decade. He lives close to the Kosi River, just outside the levee that embanks the river to the west. Rajesh, although from a relatively low caste, is lucky to own a very small plot of land, which he cultivates along with a bigger plot he leases through a system called *batai*. I asked Rajesh about mud, where to find it and how to use it. One day, he brings me to the mud. We walk together to the Kosi River nearby, cross one of its arms by boat, and meet his friends and relatives inside the embankment. Unlike many people from the countryside, Rajesh has maintained close relationships with riverside people. The embankment was built when he was a teenager; his village was divided by the embankment structure, a wall of soil that was supposed to contain the river. Rajesh's house ended up in the countryside, while his friends and relatives remained on the riverside. Because the river's movement has forced the interior (riverside) settlement to relocate a few times, the social ties between the two sides of the village have fractured, and they are now officially two separate settlements.⁷

⁶ For indigenous soil classification that includes humoral elements, see also Gupta (1998).

⁷ A levee (called locally *bund* or embankment) is a wall of soil built to control the river's flooding. The location where embankments were built was chosen arbitrarily, at times running through a town or inhabited area. In those cases, the embankments not only divided the landscape, but also people into different categories almost overnight (riverside and countryside), with very real consequences on their future lives (discussed extensively elsewhere – Cortesi (2018 and forthcoming). For a colonial history of embankments see D'Souza (2006), Hill (1997) and Singh (2008, 2011). Mishra's work, largely unknown in Western academia, narrates embankments along the main rivers of North Bihar (1997, 1999, 2000, 2002, 2003, 2007, 2008a, 2008b, 2012a, 2012b and more). For a short summary, see my page on Bihar in Claus *et al.* (2014).

With keen dedication, these farmers patiently explain how to differentiate muds by their texture, their color. They explain how each of them has a different density, transparency, smoothness, and roughness.⁸ As we speak, they show me a cross-section of mud that is three feet deep. From there, Rajesh and his friends not only describe a much deeper geological profile, but they also differentiate it from that of other areas with which they are familiar, some of which lie in other districts. They do not hesitate to step down into the river to get the mud they want to show me. If we were talking about plants, they would probably send one of younger boys to get a leaf or a fruit, but in the case of mud, they enter the river themselves: "These boys have no idea about mud. Not yet."

These men in their forties demonstrate the ways in which each type of mud "opens up" differently to those who know how to hold it in their hands. They carefully drop the mud into my hands to allow me to feel its weight, compactness, and density.⁹ They instruct me on how to feel the mud's smoothness with my fingers, how to perceive its texture by rubbing it in my palm, how to distinguish the ways in which it reflects the light. Although they don't *tell* me the difference, with connoisseurs' gestures, their hands are coaching mine. Feel the moisture, see the variation between *keval mitti* and *kala mitti*, they invite me. Both muds are dark; they are almost the same. *Keval* is heavier, very clayish and compact. *Kala* black but still quite heavy and clayish. Both need a lot of water if you want to cultivate them. *Pekhi*, *dokki*, and *domath mitti* are important for their agricultural uses, and specifically for their ability to contain, retain, or drain water, respectively. Infiltration and permeability also enter into a discussion of the structure of mud and its various degrees of granularity.

Despite their invitation to *feel* the mud, I try to rationalize their sensorial guidelines by distinguishing the mud by color, identifying its mineral composition or at least its main ingredient: sand, clay, or silt. Local distinctions are far more specific than what I can discern myself. Each question, drawn from months of observations, represents only one of the seemingly endless layers of their knowledge, revealing more to be explored; our discussion is merely the tiniest fraction of an iceberg of practice. Similarly, locals recall a "soil expert" who once visited the village, dug a deep bore-well, and collected samples, only to keep repeating "sand, clay, and silt" like a mantra. He learned nothing more than he already knew, and the villagers, too, learned nothing from him. The expert was keen on dissecting mud, they told me, and could not be bothered to learn how to handle it (for similar observations elsewhere, see Sillitoe 1998).

Feeling the mud is fundamental to learning how to use it. I receive mud in my hands and close my eyes. Can you feel how *halka* (light) *dussi mitti* is, my informants ask? I recognize this mud: in the Bhojpuri areas it is called *baluvayi* (*balu* is sand). It is arid and mostly sterile, isn't it? They laugh at my proud attempts. Despite being mostly *balu*, it is great for growing crops like potato, but also chili peppers, and lentils (*masoor dal*). Increasing the proportion of sand is used to bring soil to the consistency desired to create *uncha*, the elevation on which to resettle the *basti* (village) after a flood. *Kewal mitti* is dark and very rich in clay. There is also *gorki kewal*, which is similar in composition, but whitish (*gorki* being the Maitheli for *gori*, light in color, also used to name people of Caucasian origin). Both are different from *chickni mitti*, also rich in clay and silt, which looks yellowish and holds water and feels oily between the fingers, and also different from *bangar*, an even more slippery variety of mud. *Domath mitti* is also very fertile and wet, but drains well. *Domath* is *kadha*, hard, and when you plough it breaks in bigger pieces (called *dhela* in Bhojpuri). These muds have different uses. *Kewal mitti* is often used to build *kuccha* houses (mud houses as opposed to concrete ones), but then *gorki mitti* and *chickni mitti* are applied together with *gowar*, to decorate it.

At first I assumed *gowar*, mentioned among other types of mud, was yet another type of soil, and did not realize it is cow dung (called in standard Hindi *gobar*). Cow dung is used in place of clay to soften the soil, for example when drilling wells and to seal cracks in pipes. A crucial component for Hindus in the ritual transformation from dirty to clean (see Jacobson and Wadley 1977), cow dung is not considered mud, but it has an affinity inasmuch as it can be mixed with it. Muds are mixed to attain certain consistencies and properties (particularly regarding water, such as holding water, repulsing water, absorbing an excess of water, and so on), and adding cow dung to mud purifies it. Mud in itself can be *saf* (clean) or *ganda* (dirty)—*dussi mitti*, cleaner

⁸ These English terms are translated from the following Hindi: transparency – *paaradarshita/aap paar dekhaiye dena*, smoothness – *chikanaee*, roughness – *karkashataa*.

⁹ The English translation for the original in Hindi: density – *lathapan*, weight – *wajan/bhaji*, compactness – *pakkad*.

than *chikni* and *domath*, is used as a soap to clean hands and vessels. *Gowar* is added to change the character of the mud, to render it proper for uses that require a pure mud. Known to repel insects even when dry, it is diluted with water and soil to white-wash the walls and the floor of a house, for example. When "out of place", like on a woman's sari, cow dung is still considered dirt.¹⁰

Mud is found both in the space of the river and outside of it, in the riverside and in the countryside. Dirty mud, however, is more commonly found outside (in the countryside) than inside (in the riverside). Inside, during every monsoon season the river swells and engorges everything. Yet—and Rajesh and his friends' voices step on each other as they reassure me of it and possibly make sure I represent them correctly—inside the river, water always flows, makes its way, and runs away. Neither water, nor anything else, they clarify, is stagnant inside (the river). After the monsoon season, people build their villages on *uccha* (elevation) with soil (generally with *dussi mitti* and *balu*) for protection from the rising water. By contrast, outside the embankment, there are plenty of hollows saturated by water (*jal jamao*). The mud there can be filthy, bad-smelling, and unhealthy. Water hyacinths begin to grow and mosquitos breed on these sites, which release a putrid stench.¹¹ Inside the embankment, however, even the air flows freely. There are fewer mosquitoes and people prefer to fumigate with neem leaves in the evening rather than use a mosquito net. Animals and agricultural fields are healthier.¹²

Agriculture is easier, inside the embankment. The river releases *gaad* (silt), which is conducive for agriculture, so farmers need fewer pesticides and fertilizers. Yet Rajesh cannot lease land there. The farmer needs to physically occupy the land on a continuous basis to avoid it being expropriated by the land mafia. Moving inside the embankment is a complete change in lifestyle that Rajesh and his family are unwilling to undertake. He confesses that his wife would revolt, and they would have a hard time finding wives for their sons. Are people inside poorer, I ask, is there less money inside? No, *paisawala* (or *amir*, *dhani*, *sanpan*, rich people) are also inside. We discuss whether it is more difficult to live on the riverside, but we don't reach a definitive answer apart from the shared idea that life inside is *prakritik*, natural, and outside is *vikasit*, developed.

My father had warned us, says Rajesh, that we will miss the river and its mud once the embankment cut us off from them. Even though his house "fell" in the countryside, Rajesh's father publicly protested against the embankments and questioned the safety these structures were supposed to bring. What security do we have without anything to eat? What form of safety comes from barren fields? What protection from making the river into an enemy? River water needs to flow freely. As the saying goes, *Ai Balan to bandhalon dalan, gai Balan to tutlon dalan*, which means, when the river comes we build a *dalan* (an additional room, a sign of prosperity), when the river goes (elsewhere) the *dalan* falls apart.¹³

3. Mud and caste

While mud is valuable and treasured by farmers, it does not glint everywhere and on everybody. Mud is also used to identify, and therefore differentiate, people's caste from the lowest castes. Doms and Musahars, considered the lowest among dalits (the former "untouchables"), are said to be identifiable by their "muddy" or dirty clothes. Mud sticks to the body of those who deal with it through activities such as walking on a muddy path, playing in quicksand, fishing in a pond with their hands or nets, or collecting snails in waterlogged areas—all activities that leave a trace on the body. Snails, creatures of mud, are one of the few foods available in flood times, cherished by very poor people who also belong to very low castes. Hidden in the mud of bogs, snails

¹⁰ *Gobar* cakes, sundried patties of cow dung and hay, are currently sold online in India and abroad by several merchants, including Amazon and e-Bay. The best-selling cakes in the USA are from a company called "Cosmic Vibrations" and sold in biscuits packaging of 200 grams each—gift wrapping is available. Since they sell like hot cakes (!) the price is expected to raise considerably from the current \$10/packet. They are advertised as "pure, made by bare hands." Being so inherently pure, the caste of the person who assembles the cow dung cake (*goitha*) does not matter.

¹¹ For more on water hyacinth, see J. C. Bose (1922); P.K. Bose (1933) and Iqbal (2010).

¹² Local understanding of the river and its floods are theorized in my forthcoming articles in conversation with the pertinent literature on these topics (D'Souza 2006; Lahiri-Dutt 2014; Saikia 2011; Singh 2008; Singh 2011).

¹³ For more see Islam (1990) and Lahiri-Dutt's work, in particular Lahiri-Dutt and Samanta (2013).

are collected by women and children and eaten as a delicacy. Collecting them necessitates walking on hardened soles, as scratches from their shells are prone to infection. Mud harbors many a hidden but hazardous treasure.

The use of mud as a marker to identify dalits is remarkable because dirt and ritual pollution (henceforth pollution) are, in rural India, conceptually very different.¹⁴ There are very dirty places and objects which are considered *shudh* (pure) despite not being *swach* (clean), and places and objects (as well as people) that may be very clean but are still considered ritually polluted. People from lower castes are considered polluted and polluting regardless of their cleanliness. The use of mud as a sign to identify dalits highlights the fact that dirt and pollution are not synonymous, though their connection is more nuanced than is suggested in the literature.

It is true that, as Susan Bean once famously wrote, "there are no ethnographies that do not discuss the role of pollution and purity in Indian social life" (1981: 575). The Indian caste system has always been a topic of interest for social scientists, most developed by the village studies of the 1960s to 1980s (to mention a few, Jayaraman 1981; Lakshmana 1973; Mayer 1960 and Mathur 1964). In the last few decades, however, the stream of studies on caste has dwindled considerably (though, see: Ciotti 2010; Beteille 2012; Das 2012; Deshpande 2011; Guha 2013). Later work focuses more sharply on the connection between identity and power and on the politics of caste (Gupta 2012; Jaffrelot 2012; Jodhka 2012; Kothari 2010; Marglin 1977; Pai 2002; Witsoe 2011).

Despite the groundbreaking work on the topic by R.S. Khare (1962), neither earlier village studies nor more recent works have fully examined the relationship between dirt and ritual pollution in terms of the locally meaningful material and the symbolic aspects of cleanliness. Pollution and purity have also been crucial in studies of the colonial history of sanitation (Arnold 1993; Bashford 1998; Bashford 2004; Cohn 1965; Kaviraj 1997). Recently, the work on sanitation has elaborated on hygiene and its connection to caste (Khanna and Das 2016; Lamba and Spears 2013; O'Reilly 2010). More broadly, the cultural concepts of dirtiness and cleanliness have also been explored at length in other geographical contexts (to mention a few, Bouju 2008; Campkin and Cox 2007; Drazin 2002; Dant and Bowles 2003; Geest 1998; Lizardo 2012; Smith 2008), most often either equating dirt to "matter out of place" (Douglas 1984) and "entropy" (Bateson 1987) or, occasionally, reading the materiality of dirt as the abject (Sartre 1984).

In most of these works, however, the polluted and polluting characteristics of low castes are generically linked to the jobs their members perform, the source of the contaminated matter. An example is midwifery: "Childbirth pollution is the most polluting of all (jobs), far greater than menstruation, sexual intercourse, defecation or death" (Jeffery and Jeffery 1989: 106). Yet there are other professions similarly involved in childbirth but not equally "polluted." Why do childbirth and its materials pollute the *dai*, the midwife, but not the obstetric surgeon? The same matter may not always have the same polluting connotations: pollution is not simply equivalent to dirt, nor is dirt simply a pollutant.

The association between dirt and pollution elucidates the structures of discrimination. If people from lower castes are considered "dirty" by those of higher castes, that is because of the intersection between caste and class. By virtue of being the lowest in the caste hierarchy, they are, more often than not, the poorest, as the literature has acknowledged in multiple ways, including empirically (Apte 1988; Borooah *et al.* 2014; Mukherjee 1999). It is because these people are poor that they engage in occupations that are "dirtying", in activities in which members of higher castes or classes will not participate.

Recently, the link between caste and occupation has weakened. Although, in rural North Bihar, "modern jobs" are not as common as in other parts of the country, from a local perspective, the number of people who refuse to perform their caste-associated occupation is exponentially increasing, a fact that is often commented upon in the public realm. Yet, the correspondence between caste and class remains very tight, when compared to the rest of the country. As Deshpande writes, even in modern times, higher castes tend to get absorbed into higher paying and more prestigious occupations, while lower castes get concentrated at the lower end of the

¹⁴ Despite the cognitive linguists Lakoff and Johnson's well-known argument about dirt and cleanliness as the experiential base of notions of impurity and purity (1999).

same spectrum (2011).¹⁵ So, she continues, even if the strict link between caste and job is broken by the introduction of modern occupations, caste and class continue to overlap (also Gupta 2005).

While the correspondence between caste and job is less solid than before, the literature remains focused on a person's job as the main activity that defines and represents the household's identity. Mud, in contrast, offers material evidence to widen this enquiry to a broader set of family activities. As Deliege writes, "the dichotomous opposition between purity and impurity is common in the world's religions, but in India it was used to rationalize and legitimize the very foundations of the social structure" (2011: 49). If purity and impurity were commonly justified by the caste's traditional occupation, now that the link between caste and occupation is loosening up, and purity is increasingly linked semiotically to the multiple activities in which people engage. We have seen how mud is positively related to farming—the main occupation in rural India. On the other hand, it is less positively connoted when it is the material trace of other activities in which the family engages. It is in this context that a connection between caste and purity is burnished through mud. Mud, the quintessential dirt that pervades the rural environment, comes to mean impurity when other vectors of pollution start to lose their importance. Mud is not dirt, but becomes dirt when other dirt(s) lose their meaning.

This development shows clearly how the materiality of mud performs the crucial function of hiding the discrimination at the origin of the semiotic process. Material dirt on a body results from activities that people are engaged in due to poverty and discrimination. Yet, the first semiotic relation (dirt as an *index* of dirty activities) hides the second (dirty activities as an index of poverty and discrimination). The visibility of dirt connects people with the activities that they have performed. In other words, low caste people are dirty because they engage in dirty activities. The inverse of this causal relation—people who engage in dirtying activities are doing so because they are from low castes, therefore poor and discriminated against—is far less apparent. Dirt appears to originate from the activities undertaken, behind which there is (supposedly) nothing else than a predisposition to dirt, or the lack of habits and values pertaining to cleanliness.

In any given context, this net of semiotic relationships exists only if a set of people shares the same understanding, if there is a community of practice made by those who can interpret and reproduce it. There is no code, no set of conventions, if nobody knows how to de-code it. As a result, the "possession of the code", the stereotypical association of people with mud, is a prejudice that is also a sign of the interpreter's identity. This semiotic process, however, can be manipulated, and those skilled in the code both know how to manipulate it and how to unmask its tricks.

During my fieldwork, I noticed that many of my friends from the Musahar and Dom castes would dress formally when accompanying me somewhere, or would quickly "freshen up" and change if my visit was unexpected. As a result, they would be more formally dressed, and possibly even "cleaner" and freer from mud and dust than other people from other castes (with whom I have an analogous relationship). Notably, in the past, dalits were prevented from wearing certain clothes and had to perform humiliating tasks such as removing their shoes in front of people belonging to higher castes, and carrying a spittoon so that their spit would not contaminate the ground. Because all their inalienable possessions, including their shadow, were considered polluted and therefore polluting, they were to alert people of their arrival (Mendelsohn and Vicziany 1998). Weighted down by such a cruel and painful historical baggage, being clean and dressing formally may well be one of the few forms of social, cultural, and political affirmation left to people who historically have undergone such oppression. Similarly, Craig Jeffrey notes that Muslim and *dalit* boys go to great extremes to be well-groomed and well-dressed, which he sees as a reaction to being associated with pollution for decades (2010). While the adoption of the norms of higher castes by members of lower castes can be seen as an aspiration to rise in the caste hierarchy (sanskritization), in the case of hygiene it may also be simply to free oneself from some of the impositions of castism and its relationship to moral value and personal worthiness. As the next vignette will demonstrate further, since dirtiness is considered a mark of lower caste, cleanliness is a path for social aspiration, not necessarily in terms of caste mobility but more in terms of prestige or personal morality.¹⁶

¹⁵ See Mahapatra 2009, also for a definition of middle and lower classes and its intersections with caste.

¹⁶ This discussion concerning potters and fisher-people, each related to a specific caste and both dealing with mud, is to be further developed in a forthcoming publication.

4. Gendered mud

Rivers are a common feature of the landscape in North Bihar; despite being a terrifying presence during the flood season, people live intimately with these physical and symbolic entities, as in many other parts of the world (Carse 2014; Harris 1998; Muehlmann 2013; Ogden 2011, amongst others).¹⁷ Rivers are sacred for Hindus, but all the inhabitants of rural North Bihar, whether Hindus or not, enjoy their proximity to the river, visiting it for its serene setting, for its fresh air and water, for silence and solitude, or for collective enjoyment.¹⁸

During my decade of research in Bihar, I have observed that people's relationships with the river are changing. I am often surprised by the recent trend of mothers curbing their children's relationship with their environment by restricting their presence in what are considered dirty places. I noticed this in several families of middle lower class—often overlapping with relatively low castes—across different areas in North Bihar. For example, I have known Preeti for a decade, and have always thought of her as a considerate woman. With regard to her children, I remarked she has a kind way of persuading them to experiment with their surroundings, in comparison to other mothers who adopt more protective or forceful strategies. Yet she forbids her five children, aged two to twelve, to play in the river. This not only prevents them from enjoying the river, but also from learning about it, and particularly from learning how to swim.

Preeti, like many of the neighboring women who live outside the embankment, grew up in the area inside the river but, upon marriage, moved into her husband's household in the countryside. Where she grew up the river flows freely, but floods several times a year because of the levees—which were ironically constructed as a flood-control measure that instead have constrained the overflow of water, modified the geomorphology of the river, and consequently worsened floods. Preeti herself knows how to swim, and she recalls proudly how this skill saved her life more than once. She is also acutely aware that knowing how to swim is equally important in areas outside the river, where she lives now. In the countryside, severe floods are less frequent but more unexpected than in the riverside. Swimming, for example, saved her sister-in-law, since then affectionately called *pandubee* "submarine."

It is not because Preeti is afraid of the river: she also forbids her children to have fun at the local pond, which is almost risk-free. Ponds and rivers are polluted nowadays, she retorts, despite later contradicting herself by stating that she would drink river water. If the children play in the river, or in the pond, they will be considered low caste, she comments. If only low caste children go to the pond, then only low caste children will see her children anyway, I reply. Instead, she acknowledges that people from all castes go to the pond or to the river, but she also points out that the children's clothes will become muddy, and that on the way home, everybody will see them as "dirty children."

I mention to both Preeti and her husband how their children's inability to swim may increase their risk of drowning in floods. I relate how my parents forced me to learn how to swim as a toddler. Rajesh shrugs his shoulders and points at Preeti. Ask her, he says, she is the one who does not allow them to go to the pond. Preeti quietly explains to me that her children "will not learn how to swim" because "they should not even need to know how to swim."¹⁹ She says that "those whose living standards are good do not send their children to the pond or to the river." She hopes that her children will already be living somewhere else when the next severe flood comes. We all silently know that her hopes are unrealistic. Her children are too young to move out in the next few months—or years, even if they are lucky—before the next flood, nor is the family likely to go elsewhere any time soon. Preeti's attitude is not isolated; this prohibition on playing on the riverbanks is widespread among middle class families.

The story is not so simple as Preeti not valuing mud because she does not work the fields, as her husband does. On the contrary, she recognizes the importance of mud, and does not see this as contradictory to her rejection of mud on her children's clothes. Close to her hand-pump in the courtyard, Preeti keeps a jar of *peeli*

¹⁷ To be precise, rivers have become a terrifying presence during floods since the construction of embankments, which restrict water and increase the turbulence of its flow.

¹⁸ In my fieldwork areas, across the rivers of North Bihar, Hindu are approximately 85%-90% of the population, and the rest are Muslim. Buddhist and Christian families are extremely rare.

¹⁹ I include the Hindi original when it communicates the force of the statement: "*Ji, patta he ki woh terna nahi sikega. terne ka jannane ki bhi zaroorat nahi honi chaye.*"

mitti (yellow mud). She uses it to coat her pot to keep it from blackening in the fire. *Peeli mitti*, similar to *chickni mitti*, is also "*saf*" (a generic term for clean, but here meaning pure), which is why she puts it on her pot and keeps it close to the family's water source. Mud also keeps her house cool and beautiful. An industrious woman, she uses the mud to coat the walls of her hut, protecting the house and rendering it more habitable in both cold and hot seasons. She also uses mud to decorate the outer walls of her mud hut, often with a bas-relief of flowers and peacocks. Some people paint over it with bright colors, she says, but she keeps it natural: she likes the color of the mud.

Preeti's story is typical of middle-class women living in the villages of the countryside close to the embankments. Many were raised in the riverside and are therefore very familiar with the river. By virtue of this intimacy, they are expected to prepare for floods better than their husbands or their in-laws.²⁰ At the same time, however, their married life beyond the riverside requires them to cultivate respectability, and to teach their children to do the same. One local interpretation of respectability is related to cleanliness, being free from mud.

Mud is a precious substance that may help a family to prosper, but it is also the substance that needs to be avoided to socially signal prosperity, or even the aspiration to it. Mud elevates the farmer's family when it dirties his clothes, but ties the same family down socially when it is on his children's clothes. Children's cleanliness is therefore a performance of success. If Preeti's family is to be successful, they will leave their village on the outskirts of the river. They will go to a place where they face neither floods nor the possibility of dirtying their clothes with mud. Acting as if this is about to happen is key to signaling to the community their vision of success and, in some sense, to making it happen.²¹

Rajesh's dirty clothes are also a performance of success. When I jokingly ask Rajesh if Preeti complains about his dirty clothes, he laughingly says that mud is his uniform: only *neta* (political leaders) who don't do any work wear white kurta pajamas. Of course, Rajesh's reference to the local ethos of work is more complicated and far from unambiguous. He means that, by being muddy, he signals that he is working hard on his irrigated land. People know that he owns a small plot and he is leasing some more land. If there is mud on his clothes, his field is likely to be irrigated, which is in turn a sign of past and future prosperity—being able to invest in irrigation and likely to benefit from it. Being clean, however, could also signify that he is so well-off that he can afford to hire people to do the work for him. Rajesh himself agrees that his children *will* eventually join him in the fields, but only once they have completed their studies, from which they should not be distracted now. Considering how increasingly difficult is to make a living as a farmer in contemporary India, the family's plan for the children does not necessarily involve mud.

For her children to have a chance in the discriminatory public education system, Preeti knows that her job is to prevent them from being perceived as low caste. This is the result of another broad historical transformation, in which formalized education, part of the development and civilization project, has become an undiscussed value, even at the cost of devaluing the environment and human interaction with it. In the specific context of her origins (the riverside) and the family habitation just outside the embankment (the countryside), she also needs to spare the family from her own "riversideness." In such a riverine and agricultural society, however, de-skilling challenges both livelihood and survival. Yet, Preeti's choice, when read in relation to the larger historical and socio-political context, appears a necessary one. Perhaps Preeti is not so worried about her children being dirty, after all, but about how dirt can be interpreted and how these interpretations can have an effect on her children's future.

Mary Douglas' well-known definition of dirt as "matter out of place" comes to mind (1984). Why are Rajesh's clothes different from his children's? Maybe Douglas meant that dirt is a *sign* that is misplaced in some form, or does not lead to the expected semiotic relation. If a spoon is on a plate, I tell Rajesh and Preeti, it means that lunch is on its way and people are ready to eat. If a spoon is on a plate in the hand-pump, it means that the spoon is dirty but someone is getting ready to clean it. If a spoon is on the floor in the hut, it is not only

²⁰ See Sultana's work, in particular Sultana (2010), for more on the gendered preparation for floods in the context of neighboring Bangladesh.

²¹ The performance of success has been recently discussed by the literature as a bluff, either explicitly (Newell 2012) or implicitly (Mosse 2004; Rap 2006).

the spoon which is dirty but the whole household. The place (the hut's floor) disrupts the expected semiotic relationship established by the sign, which therefore stands for "mess." Preeti adds that "mess" would be finding the spoon on the floor of the hut "in the middle of the afternoon" or in the hand-pump "at night." She is rightly pointing out that the temporal context, not only the spatial one, makes the difference. We conclude that Douglas—in my simplified rendering of it—was right. Mud is dirt when it points at a *contextualized interpretant* that does not correspond to positive local values. Better said, the contextualizing interpretive practice reflects and maintains local values. Local values include prejudices, discriminations, and unequal gender relations.²²

Women are also direct victims of social prejudice (although tragically part of their own subordination, Kapadia 2002; Shipton 1994). The literature on gender has amply discussed how the female body bears the brunt of social prejudice, starting from menstrual taboos associated with lack of cleanliness and purity (Puri 1999). Only a few scholars, however, have noted the greater suffering women experience in disaster situations (Agarwal 1992; David and Enarson 2012; Enarson 2012; Fordham 1999; Hoffman 1999; Ikeda 1995; Seager 2006; Sultana 2010). In North Bihar, for example, taboos against female exposure are directly responsible for the greater number of women than men who die by drowning when the frail overloaded boats that cross rivers and flood areas capsize—as they often do. Like Shakespeare's Ophelia, the *sari* (women's main clothing item) inflates like a balloon, and once drenched and heavy, engulfs and drags down the woman, burying her alive in the mud of the riverbed.²³

Yet even in the very moment in which the boat is keeling over, very few women attempt survival by loosening their clothing. This is well represented by my own experience on these boats during floods. Once, when the boat was about to capsize, I notice an elderly woman unknitting her petticoat. Eventually safely disembarking, I ask her if I should have done the same. With a brave lightening of her tired eyes, she justifies herself by specifying her status: "I am a widow." She conveys the struggle of providing for the family alone, the condition, both liberating and excruciating, of not having to hold on to anybody's honor. She is beyond society, and so her body is freed from Haraway's cyborg (1991).

As we have seen, the newer generations are less likely to even know how to swim. Children, however, often transgress against their mothers' restrictions towards mud. The river offers an unmatched place for fun. They enjoy the sensory escape of the precarious river and its squishy mud. Quicksand, in particular, provides an opportunity of perilous hilarity for teenagers who have learned to evade their mothers' questions. I rarely find areas of quicksand without children playing in them. My field assistants and I enjoy watching the rollercoaster experience of the mud that engulfs the body and sucks it down, the comradery of helping each other escape, the ability to stay still even when things get too sticky. This is mostly a boys' activity. Younger girls sometime go along with their elder brothers, but rarely find other girls with whom to enjoy such an escapade. As children grow, playing with mud and knowing the river is increasingly a gender-biased activity.

²² As many sociological studies have highlighted, upward mobility is signaled by moving away from manual labor and what is associated with it, a process starting with women and the younger generations. Their clothes in particular are a means of identification and differentiation (Tarlo 1996). At the end of the nineteenth century, Veblen wrote that "no apparel can be considered elegant, or even decent, if it shows the effect of manual labor on the part of the wearer, in the way of soil or wear (...) the dress of women goes even farther than that of men in the way of demonstrating the wearer's abstinence from productive employment" (1899: 170).

²³ "When down her weedy trophies and herself
Fell in the weeping brook. Her clothes spread wide;
And, mermaid-like, awhile they bore her up:
Which time she chanted snatches of old tunes;
As one incapable of her own distress,
Or like a creature native and indued
Unto that element: but long it could not be
Till that her garments, heavy with their drink,
Pull'd the poor wretch from her melodious lay
To muddy death" (*Hamlet*, act IV, scene 7, lines 198-208).

This is particularly true for middle class and lower-middle class families, because poorer and lower caste children are less controlled by their parents.

The above vignette supports and further expands the argument that mud normalizes gender-based discrimination. In the previous section, I discussed about how mud puts the body that carries it into a specific (low) social class and caste. In this section, I have shown how mud has been instrumental in creating further gender-based discrimination. The material nature of mud concretizes discrimination as natural. As a result, mud hides patriarchy, castism, classism, and other political structures of oppression that arrange, constrain, and rule these people and their bodies. Now that modern jobs have loosened the link between traditional professions and caste, and in turn between caste and pollution, the material of mud, by virtue of being evident and palpable, attests to the (supposed) dirtiness of dalits. It concretizes discrimination through (supposedly) indisputable facts instead of violent social constructions.

Preeti's attempt to escape the cycle of being muddy and being low class is not likely to end well. To break free from discrimination, many people like Preeti steer clear of the mud. To avoid the mud, however, means to de-skill, to personally and socially unlearn the bodily expertise fundamental for swimming, farming, walking on the mud, for living in this environmental context. Knowing mud is necessary for the farmer and his family to be healthy and wealthy. By not knowing mud, the children of these aspiring middle class families are less likely to overcome the structural imposition that relegates them to the lower side of their social hierarchy, and are even less likely to survive the river's vagaries.

5. Mud across the river

As we have seen, in rural North Bihar, mud is used to operationalize and naturalize social hierarchy and discrimination along the well-known axes of caste and gender. At the beginning of this article, in the meeting with Rajesh and his friends from the riverside, I introduced the recently developed oppositional relationship between riverside and countryside people. The creation of embankments along the rivers of North Bihar has scarred the social landscape, splitting it into the two realms of riverside and countryside, a division that has produced separate identities on the two sides of the embankment and a host of biases. In this section, I aim to illustrate the mud of the riverside and the countryside, and how its semiotic stickiness helps to redefine the idea of dirt.

A characteristic of riverside people, in the eyes of the countryside dwellers, is to have dust on their feet. To an outside observer such as myself, this seems unrealistic, since the countryside and even the town appear to be similarly dusty or muddy depending on the season.²⁴ The logic behind it seems to be that since there are no (cemented) roads inside the embankments, riverside people need to walk in the dust, while countryside people could potentially either walk on concrete or board a vehicle right outside their house and keep their feet clean until reaching their destination. According to the civilization trope, this path from riverside to countryside is metaphorically a trail from nature to civilization. Riverside people, as well as people from lower classes and lower castes, women and children, are still at the beginning of the track, while adult male farmers from upper and middle classes and castes from the countryside are at the civilized end.²⁵

Lalita, one of my field assistants, lives in the countryside but close to the river. Her village is 50 km from the nearest town. I accompany her and her husband to the doctor. While we are in the crowded waiting room, she narrates appreciatively that this doctor is known for according priority to riverside people. While chatting about how riverside people can be identified, Lalita whispers to me that I should look at their feet. Having learned to recognize people by their caste, this is to further my training in social classification. Yet I disappoint my teacher by finding it very hard to distinguish between different kinds of dirty feet, including my own. During another long wait, this time at the railway station, I undergo a more advanced version of the same

²⁴ The supposedly dusty feet of riverside people are then muddy during the wet season.

²⁵ For a clearer argument, see my article on the notion of disaster, forthcoming and partially in Claus *et al.* 2014.

training, where I practice gazing at their manner of talking, walking, dressing, and moving, but I am warned that the dust or mud remain the defining characteristics of riverside people.²⁶

I also know, however, that riverside people often change their clothes after crossing the embankment, in particular when going to a formal place in the countryside, such as a doctor's office. When I raise this point with Lalita and her husband, I am told that riverside people, even if they change their clothes and wash their face and their feet and their hands, will still have mud on their ears. I hear the same comment elsewhere, with the variation that mud could be *behind* their ears. As in my previous example about how my lower caste friends dress more formally than others and are more likely to be clean, the bodies of all these marginalized people, no matter how clean, remain dirty. The reference to the ears is particularly revealing. On or behind the ears, mud is seen or imagined by others even when the carrier of mud cannot see it. The ears are also an orifice of the body: mud, external to the body, finds ways to enter it.²⁷

No matter what the "wrong" body does to get clean, it will always remain dirty, because it is intrinsically dirty. The reason why the ears of muddy people can never be properly clean is that mud can potentially be cleaned off with soap, but, since ritual pollution cannot, when mud stands for ritual pollution, it cannot be cleaned off with soap either. For example, the left hand, even if washed, cannot touch food, because it is generally used for cleaning the body after defecation, and therefore considered polluted. Similarly, some people will not eat with forks and spoons but only with their fingers, which have not been in other people's mouths. We have also seen that mud, neither polluted nor polluting, is not the reason why these bodies are dirty. Certain mud, indeed, can be clean. *Dussi mitti*, for example, is used instead of soap on hands and vessels for its abrasive properties. Yet when mud serves to identify the lowest, like other pollution and pollutants, it is impossible for it to be simply washed away. When traditional pollutants, such as occupational-based ones, do not apply anymore, mud serves a similar purpose. Mud does not dirty the body; rather, it simply marks a body that is intrinsically dirty.

As a marker, mud is particularly effective. Through mud the world puts a trace on the body detailing its past interactions with it. Mud is an ever-present sign of where a person has been, where they come from, who they are. The axes of discrimination are not only oriented to caste and class and gender and age but also to the location of habitation, a category often disregarded by ethnographies of India.²⁸ The riverside is a muddy place, that, as Rajesh was telling me at the beginning of this article, may be healthier and more "natural", but is also associated with lower status. Were Rajesh to move inside the embankment, the mud on his body will look different to his current neighbors outside.

The absence of visible mud is not a sign of its semiotic absence. Although absence from mud is considered a path for upward mobility, its apparent absence is also the chain by which discriminated people are tied down to their lower social status. It does not matter whether, as we have seen, these people are the cleanest, and there is no visible mud on them: mud is so semiotically sticky that it remains on the body even in its absence. One is primed to see mud if one expects mud by other indices. It is neither the materiality of mud nor its semiotic value, but both together, fact and value, that make it so adherent to the body. Even if mud can be washed off, it still lingers, at least for those who are attuned to its potential presence. Even when it is not there, mud is still an invisible paint that codifies a body that may or may not carry it. Not by dint of any specific color or grain, dirt, by its presence *and absence*, is a mark that organizes people into categories. Mud is expected on discriminated bodies, and it is *seen* on them even when it *cannot* be seen. If one knows that a specific person is dirty, one will expect to see dirt even when no dirt is there.

How, then, can dirt be "matter out of place" or as discussed earlier, "a misplaced sign", if it is, at times, not actually placed anywhere? In this case, dirt can be read as *a sign formed by the absence of the sign where*

²⁶ As Kockelman remarked, "...people may say they make inferences according to one kind of sign but in reality they make inferences according to dense, context-specific ensemble of signs; so the idea that mud is semiotically significant may just be a local ideology of interpretation; people are actually tacitly sensitive to a much wider array of signs" (personal communication).

²⁷ Note that the Muslim *wudu* practice of ablution before attending the mosque includes cleaning the earlobes.

²⁸ Studying neighboring West Bengal, Jalais remarks, albeit quickly, about the significance of the place of habitation (2010).

it is expected to have been misplaced. Even when dirt is not "out of place" because it is not in *any place*, its semiotic and material *presence* is in its *absence*. These conclusions can be shown in condensed form as follows:

- a. Dirt is matter out of place (classical definition);
- b. Any significant matter is likely to be a sign.

Given a and b, it follows that:

- c. Dirt can be a misplaced sign.

Also,

- d. Prejudice assumes dirt, as a marker of ritual pollution, on discriminated people;
- e. Discriminated people often are the ones who are more careful about being dirt-free;

Given the above, it follows that:

- f. Dirt is semiotically present even when it is not materially so because even bodies that are clean are considered dirty.

Given d, e, f, it follows that:

- g. The sign is in the absence of the sign.

Given all the above, it follows that:

- h. Dirt can be the sign formed by the absence of the sign in a place where it was assumed to have been misplaced.

The value of this abstract re-definition of dirt resides in its acknowledgement of power.²⁹ The classic definition of dirt is a-political, despite being similarly cognitively processed, bodily situated, and spatially marked. Evaluating dirt through a political lens, however, punctuates the literature that investigates the material, particularly studies of waste (Moser 2017; Nagle 2013; Reno 2016; Sosna and Brunclíková 2017; Weiner 1976). Giving voice to a similarly politicized landscape of middle class aspirations and racism, Reno writes, "the concreteness of bodies, their carnality, makes them powerful vehicles for expressing social difference."

Scholars of waste may stress that matter such as trash can be dumped and displaced, but never disappears. As a sign, instead, matter can dissolve on the altar of power: the absence of dirt remains a sign of difference.³⁰ It is when we physically and intellectually crash into matter and stick with it that we can analytically remove the substance through semiotic inspection (first set of propositions above), and therefore appreciate the full extent to which power defeats matter (second set of propositions).

This reasoning may seem contradictory if the Goffmanian game of the discriminated inhabitants of Bihar did not attest to it. Simplifying the ethnographic material above, in this social and environmental context, the privileged accuse the underprivileged of being dirty. The unprivileged clean themselves (or go to any extent not to get dirty). The privileged, though, continue to see them as dirty, and talk about the underprivileged cleaning themselves as a proof of their dirtiness. As an exception that confirms the rule, some underprivileged are not ashamed of being muddy. They refuse to play a game they would never win. By being dirty, I imagine Douglas saying, they are revolutionaries.

²⁹ Douglas, inspired by a Durkheimian division of clean and unclean, as well by structuralism, claims that ritual pollution is enforced in order to reinforce the structures of a given society and to protect the status quo. A norm is for Douglas an agent in establishing hierarchies and structures of power. When analyzing Kosher food, for example, she specifies how abstaining from eating a certain type of food (such as meat, or a certain type of meat, or junk-food) is a way to increase the symbolic fortune and therefore the privileged social position of certain groups vis-à-vis others (1984 [2002 edition, first published in 1966]).

³⁰ This does not mean that one can be unaffected by radioactive stockpiles or bacteria-loaded feces, if not attending it as a sign. Instead, here you have a sign that is normally part of the matter that is standing without matter.

6. For a muddy semiotics of mud

If we flip this story around, we realize that it is about environmental knowledge, not only in a general and abstract form, but also in terms of the very real and practical interactions at the origin of learning and teaching. This is the story of the perils, mistakes, trade-offs, and disadvantages of the knowing process. Of the people who teach, who learn, who want to learn but cannot, and who do not want to learn in the first place. Rajesh and his friends urge me to learn about mud. Preeti prevents her children from learning because she does not want them to *even need* to learn. Children learn anyway, but girls are less likely to do so because of gender norms. The supposed expert on mud is narrated as unable to either learn or teach: Rajesh and his friends are disappointed to be neither learning from the expert, nor teaching him. I try to learn about mud and about its people, even when I find it hard to do so and consequently disappoint my teachers.

Teaching means to point to a sign that is not apparent to the learner, and guide him or her towards the *interpretant* via the semiotic relationship. Learning about the environment means starting to see things as signs and follow them through multiple semiotic relationships. It means considering other factors such as the spatio-temporal context of a sign, as well as the socio-political relationships and cultural rules involved. Learning about nature is learning about a complex, tight net of semiotic relationships: each sign and each *interpretant* are again signs or *interpretants* in many more semiotic relationships. Mud, and even mud-on-clothes, as we have seen, has a number of *interpretants*, overlapping and opposite:³¹ it is a positive sign and a negative sign at the same time—even when it is not there at all. As we saw with Preeti, her husband (and the other countryside middle/upper class farmers) is "dirty positive", while riverside and low caste people, and even she and her children, are all "dirty negative."

Mud is particularly effective at embodying these paradoxical meanings. Sartre attributes the repulsion of slime to its viscosity and stickiness, which appropriates the body, as well as to the ambiguity of its being neither solid nor liquid. The slimy consistency of mud invokes rotten organic material, to which repulsion is probably a healthy instinct. But other senses contradict this repulsion: mud smells neutral, harmless. Also, we know that many biologically mature substances are useful bacteriological cultures. This positive idea of mud is aligned with the ways people in North Bihar talk about mud. They do not talk about it as an agent, although mud is the cause of many effects and the subject of action verbs. In their words, it is matter in transition towards becoming alive, as life-to-be. The material qualities of mud therefore produce well-established semiotic relationships.

In contrast, equating mud to dirt is a form of depoliticization, or the masking of political issues (such as caste, gender, religion, and place of habitation) behind the material presence of a natural element. It means pretending that a complex social form with symbolic backing (mud) is a mere material trace of physical contact (dirt). As a sign, mud is a *symbol*, an arbitrary connection (similar to a cross, symbol for medical help). Yet, discriminatory social rules appropriate it to function as an *index*, a physical or statistical correlation in space and time (similar to smoke, which is an index for fire, or to clouds, which are indexes of rain).³² Mud is associated with dirty people via the conventional relationship of a symbol, which is arbitrary and therefore logically weaker than the relation of causal connection or contiguity typical of an index. By assuming a stronger semiotic relation, reading an index out of a symbol naturalizes the arbitrary power relations that connect the sign to the symbol.³³

By virtue of being a natural element, mud is an index for a specific space, the muddy field. Mud-on-clothes supposedly indexes a fact: that people have crossed a muddy path. Yet, the muddy path is metaphorically the route from muddy nature to cleaner civilization. Mud is therefore a symbol for a set of stereotypes (dirtier, lower, less civilized people), possessing the capability not only to signal, but to assume

³¹As Barbara Bender notices for landscapes, (objects) "even as experienced by a single person, are multiple and contradictory" (1998: 34 in Carrier 2001).

³²It can be argued that everything that is a symbol is also an index (or it may have been as an index). However, seeing a red cross, I do not think about the blood or the crucifix necessarily. I want to show the ways in which being muddy is still considered as a unequivocal index of being dirty despite being conventionalized and symbolic.

³³For more on the different types of signs and on other semiotic categories, see Kockelman (2005, 2010a, 2010b, 2011, 2013, 2015 and 2016), but also Parmentier (1994) and of course Peirce's corpus.

and naturalize the stereotypes. The semiotic meta-value of the use of mud to identify people of lower rank is the naturalization of this discrimination. This is not commonsensical: nature, such as mud, is supposedly democratic, blind to the social principles of discrimination. Wouldn't mud stick to anybody that passes by?

In agrarian societies located on the banks of rivers, the fact that mud is such a semiotically loaded category and is central to people's lives points to the value of mud itself. The number of semiotic relationships involving mud is an indicator of its importance as an object. Despite being often identified with the abject (Giblett 2013), mud is a vitally important substance not only in North Bihar but also in many other wet, rural environments. Although mud enters many of the stories scientists have already narrated in similar social landscapes, it is by closely encountering mud in its inseparable materiality and meaning that we can unveil the dynamism and nuances of socio-political life in these places. As we move past constructivism, mud returns concrete, and abstract nature evaporates. It is only by attending to the material complexities of mud that we can detect its semiotic multiplicities and it is only then that the material complexities appear.³⁴ I foresee mud as an increasingly popular object of enquiry across the social sciences (for example, Lutsky and Burkholder 2017).

Nature, such as mud, is used not only for livelihood purposes, but also for reinforcing and negotiating power relations. To examine this paradox, I follow the path of environmental anthropologists who study human society through its interactions with the environment, and in particular of political ecologists who focus on the working of power as a mediator of these interactions (just to mention a few, Braun 2002; Bryant 2014; Pandian 2009; Rocheleau 2008; Watts and Peet 2004; and an overview in Robbins 2004). Within this tradition, my ethnography of mud investigates this substance as a sign in the communication and negotiation of power relations, both in terms of aspiration and discrimination.

We know that things are thick with power (Bijker 2006; Bijker, Pinch, and Hughes 1987; Mosse 2003; Winner 1986, among others). But this article argues that nature is used to *talk* power, and therefore to *make* it.³⁵ By analyzing this communication, we can closely appreciate the functioning of power, its incessant re-making.³⁶ Inspired by the work of linguistic anthropologists (Keane 2003, 2005; Kockelman 2010a, 2011), and political scientists (Bennett 2009) I propose semiotics as a set of tools for opening the black box of power and revealing its workings.

Semiotics reties the scale of the personal and the public and in so doing it opens the possibility of rethinking risk. Political ecology has shown how the sphere of the public and that of the personal are intertwined (Carrier 2001). In this article, the focus on environmental knowledge reveals a specific relation between the two, that of risk. It is not only that our assessment of risk is based on knowledge: both are the byproduct of the political interplay of the personal and the public. The fact that the personal skill of swimming—abstractedly environmental knowledge—is impeded in its acquisition by the public semiotics of mud increases the risk of drowning, which Preeti and Rajesh recognize. Yet, Preeti does not want to run another risk, that of being publically perceived as a muddy and stagnating family.

This makes sense when situated in the specific historical juncture in which these processes are occurring. As Eric Wolf (1982) taught us, the immediate and sensory are not disconnected from the broader field of history. As James Ferguson and Akhil Gupta explain, the sensuous relationship to mud narrated at the beginning is not a symptom of time being stopped in remote locations such as North Bihar, nor does it take away any of the local effect of broader historical and political changes (1997; also in Heyman 2004). In today's India, caste is an increasingly weak principle of social organization. More specifically, the link between

³⁴ This discussion invites making a parallel with Ingold's sphere and globe views of the environment (2000). This Kantian and apolitical differentiation seems to be based, instead of on different ways of viewing, on different referents, concrete and proximate in terms of the sphere and abstract and remote in terms of the globe. If we use the same referent, we may be shifting the interpretant: the mud can be seen in a spherical way by those in North Bihar (including me *then*), and in a globe-like perspective by those who are far from it (including me, *now*).

³⁵ This author is aware of the long debate about what is power, and that this last sentence will not be acceptable in certain theoretical frameworks.

³⁶ Interestingly, Latour, often accused of being apolitical, as well as polemical in his political ecology, talks about this in Latour (2004).

occupation and caste, which earlier justified the association of caste with purity or impurity, is becoming progressively tenuous even in the most marginal rural areas. In the recent political economy of hygiene, fostered by discourses of development, judgements of cleanliness and dirtiness help support claims of purity and impurity. They are so powerful as to reorganize the relation between dirt and pollution, addressed here through an ethnographically based attempt to redefine dirt.

In North Bihar, mud is everywhere: on the ground, on the body of these amphibious people, on their walls, their pots, their hands, their fields, their clothes, and maybe even on their ears. Inherently ambiguous and malleable, mud blurs societal hierarchies, but also reinforces them. A sign of agricultural fertility and social dishonor, both life-giving and socially shaming, mud fulfills the fundamental roles of ensuring a good harvest and negotiating social status. By sticking to our bodies, mud defies the boundary between us and the world while also marking a juncture between nature and imagined civility. As a result, the semiotics of mud is as muddy as the substance itself.

References

- Agarwal, B. 1992. The gender and environment debate: lessons from India. *Feminist Studies* 18(1): 119–158.
- Apte, M.L. 1988. 'I am pure, you are polluted!' Who is clean and who is dirty? Humor in ritual behavior among Marathi speakers in India. *Etnofoor* 1(1): 15–23.
- Arnold, D. 1993. *Colonizing the body: state medicine and epidemic disease in nineteenth-century India*. Oakland: University of California Press.
- Bashford, A. 1998. *Purity and pollution : gender, embodiment, and Victorian medicine*. Basingstoke: Palgrave Macmillan.
- Bashford, A. 2004. *Imperial hygiene: a critical history of colonialism, nationalism and public health*. Basingstoke: Palgrave MacMillan.
- Bateson, G. 1987. *Steps to an ecology of mind. collected essays in anthropology, psychiatry, evolution, and epistemology*. Chicago: University of Chicago Press.
- Bean, S. 1981. Toward a semiotics of 'purity' and 'pollution' in India. *American Ethnologist* 8(3): 575–595.
- Bennett, J. 2009. *Vibrant matter: a political ecology of things*. Durham: Duke University Press.
- Beteille, A. 2012. *Caste, class and power: changing patterns of stratification in a Tanjore village*. New Delhi: Oxford University Press.
- Bijker, W.E. 2007. [Dikes and dams, thick with politics](#). *Isis* 98(1): 109–123.
- Bijker, W.E., T. Pinch, and T. Hughes. 1987. *The social construction of technological systems: new directions in the sociology and history of technology*. Cambridge, MA: MIT Press.
- Borooah, V., D. Diwakar, V.K. Mishra, A.K. Naik, and N. Sabharwal. 2014. [Caste, inequality, and poverty in India: a re-assessment](#). *Development Studies Research* 1(1): 279–294.
- Bose, J.C. 1922. The menace of the hyacinth. *Modern Review* 345–352.
- Bose, P.K. 1933. Water hyacinth: the terror of Bengal waterways. *Modern Review* 171–174.
- Bouju, J. 2008. Urban dwellers, politicians and dirt: an anthropology of everyday governance In Bobo-Dioulasso (Burkina Faso). In P-Y. Le Meur and G. Blundo (eds.) *The governance of daily life in Africa*. Leiden: Brill. Pp. 143–170.
- Braun, B. 2002. *The intemperate rainforest : nature, culture, and power on Canada's West Coast*. Minneapolis: University of Minnesota Press.
- Bryant, R. (ed.). 2014. [The international handbook of political ecology](#). Cheltenham: Edward Elgar.
- Campkin, B. and R. Cox. 2007. *Dirt: new geographies of cleanliness and contamination*. London: IB Tauris.
- Carrier, J.G. 2001. [Limits of environmental understanding: action and constraint](#). *Journal of Political Ecology* 8: 25–43.
- Carse, A. 2014. *Beyond the Big Ditch : politics, ecology, and infrastructure at the Panama Canal*. Cambridge, MA: MIT Press.
- Ciotti, M. 2010. *Retro-modern India : forging the low caste self*. New Delhi: Routledge.

- Claus, C.A., S. Osterhoudt, M.R. Dove, L. Baker, L. Cortesi, C. Hebdon and A. Zhang. 2014. Disaster, degradation, dystopia. In R. Bryant (Ed.) *The international handbook of political ecology*. Cheltenham: Edward Elgar. Pp. 291-304.
- Cohn, B. 1965. Anthropological notes on disputes and law in India. *American Anthropologist* 67: 82–122.
- D'Souza, R. 2006. *Drowned and damned: colonial capitalism and flood control in Eastern India*. New Delhi: Oxford University Press.
- Dant, T. and D. Bowles. 2003. [Dealing with dirt: servicing and repairing cars](#). *Sociological Research Online* 8(2).
- Das, V. 2012. *Structure and cognition: aspects of Hindu caste and ritual*. New Delhi: Oxford University Press.
- David, E., and E. Enarson. 2012. *The women of Katrina: how gender, race and class matter in an American disaster*. Nashville: Vanderbilt University Press.
- Deliege, R. 2011. Caste, class and untouchability. In I. Clark-Decès (ed.). *A companion to the anthropology of India*. Oxford: Wiley-Blackwell. Pp. 45-61.
- Deshpande, A. 2011. *The grammar of caste: economic discrimination in contemporary India*. New Delhi: Oxford University Press.
- Douglas, M. 1984[1966]. [Purity and danger: an analysis of the concepts of pollution and taboo](#). London: Routledge.
- Drazin, A. 2002. Chasing moths: cleanliness, intimacy and progress in Romania. In C. Humphrey and R. Mandel (eds.) *Markets and moralities*. London: Bloomsbury Academic.
- Enarson, E. 2012. *Women confronting natural disaster: from vulnerability to resilience*. Boulder, CO: Lynne Rienner.
- Ferguson, J. and A. Gupta (eds.). 1997. *Anthropological locations: boundaries and grounds of a field science*. Berkeley: University of California Press.
- Fordham, M. 1999. The intersection of gender and social class in disaster: balancing resilience and vulnerability. *International Journal of Mass Emergencies and Disasters* 17(1): 15–36.
- Geest, S.V.D. 1998. Akan shit: getting rid of dirt in Ghana. *Anthropology Today* 14(3): 8-12.
- Giblett, R. 2013. *Black Swan Lake: life of a wetland*. Bristol: Intellect Books.
- Gibson, J. 1979. *The ecological approach to visual perception*. Boston: Houghton Mifflin.
- Guha, S. 2013. *Beyond caste: identity and power in South Asia, past and present*. Leiden: Brill.
- Gupta, A. 1998. *Postcolonial development: agriculture in the making of modern India*. Durham: Duke University Press.
- Gupta, D. 2005. Caste and politics: identity over system. *Annual Review of Anthropology* 34(1): 409–427.
- Gupta, D. 2012. Foreword. In S.S. Jodhka (ed.) *Changing caste: ideology, identity and mobility*. New Delhi: Sage. Pp. xiii–xviii.
- Haraway, D. 1991. *Simians, cyborgs and women*. London: Routledge.
- Harris, M. 1998. The rhythm of life on the Amazon floodplain: seasonality and sociality in a riverine village. *The Journal of the Royal Anthropological Institute* 4(1): 65-82.
- Heyman, J. 2004. Conclusion: understanding matter. In J.G. Carrier (ed.) *Confronting environments: local understanding in a globalizing world*. Lanham: AltaMira Press. Pp. 183–195.
- Hill, C.V. 1997. *River of sorrow: environment and social control in riparian North India, 1770-1994*. Oxford: Oxford University Press.
- Hoffman, S. 1999. The regeneration of traditional gender patterns in the wake of a disaster. In A. Oliver-Smith and S. Hoffman (eds.). *The angry Earth: disaster in anthropological perspective*. London: Routledge. Pp. 174–191.
- Ikeda, K. 1995. Gender differences in human loss and vulnerability in natural disasters: a case study from Bangladesh. *Indian Journal of Gender Studies* 2: 171–193.

- Ingold, T. 2000. [*The perception of the environment: essays on livelihood, dwelling and skill*](#). London: Routledge.
- Iqbal, I. 2010. *The Bengal Delta: ecology, state and social change 1840-1943*. Houndmills: Palgrave Macmillan.
- Islam, N. 1990. Let the delta be a delta: an essay in dissent on flood control in Bangladesh. *Journal of Social Studies* 48: 18–41.
- Jacobson, D. and S. Wadley. 1977. *Women in India: two perspectives*. New Delhi: South Asia Books.
- Jaffrelot, C. 2012. [*The caste-based mosaic of Indian politics*](#). *Seminar* May (633).
- Jalais, A. 2010. *Forest of tigers : people, politics and environment in the Sundarbans*. New Delhi: Routledge.
- Jayaraman, R. 1981. *Caste and class: dynamics of inequality in Indian society*. Delhi: Hindustan Pub. Corp.
- Jeffery, P. and R. Jeffery. 1989. *Labour pain and labour power: women and childbearing in India*. London: Zed Books.
- Jeffrey, C. 2010. *Timepass: youth, class, and the politics of waiting in India*. Stanford: Stanford University Press.
- Jodhka, S. 2012. *Caste: Oxford India short introductions*. Oxford: Oxford University Press.
- Kapadia, K. 2002. *The violence of development: the politics of identity, gender and social inequalities in India*. London: Zed Books.
- Kaviraj, S. 1997. Filth and the public sphere: concepts and practices about space in Calcutta. *Public Culture* 10(1): 83–113.
- Keane, W. 2003. Semiotics and the social analysis of material things. *Language and Communication* 23: 409–425.
- Keane, W. 2005. Signs are not the garb of meaning: on the social analysis of material things. In D. Miller (ed.) *Materiality*. Durham: Duke University Press. Pp. 182–205.
- Khanna, T. and M. Das. 2016. Why gender matters in the solution towards safe sanitation? Reflections from rural India. *Global Public Health* 11(10): 1185–1201.
- Khare, R.S. 1962. Ritual purity and pollution in relation to democratic sanitation. *Eastern Anthropologist* XV(2): 125-139.
- Kockelman, P. 2005. [*The semiotic stance*](#). *Semiotica* 157(1/4): 233–304.
- Kockelman, P. 2010a. *Language, culture, and mind*. Cambridge: Cambridge University Press.
- Kockelman, P. 2010b. Semiotics interpretants, inference, and intersubjectivity. In R. Wodak, R. Johnstone and P. Kerswill (eds.) *The Sage handbook of sociolinguistics*. Thousand Oaks: Sage.
- Kockelman, P. 2011. A Mayan ontology of poultry selfhood, affect, and animals. *Language in Society* 40: 427–454.
- Kockelman, P. 2013. [*The anthropology of an equation*](#). *HAU: Journal of Ethnographic Theory* 3(3): 33.
- Kockelman, P. 2015. Four theories of things: Aristotle, Marx, Heidegger, Peirce. *Signs and Society* 3(1).
- Kockelman, P. 2016. [*Grading, gradients, degradation, grace*](#). *HAU: Journal of Ethnographic Theory* 2: 95–466.
- Kothari, Rajni. 2010. *Caste in Indian politics*. Hyderabad: Orient Blackswan.
- Lahiri-Dutt, K. 2014. [*Chars: islands that float within rivers*](#). *Shima* 8(2): 22–38.
- Lahiri-Dutt, K. and G. Samanta. 2013. *Dancing with the river: people and life on the Chars of South Asia*. New Haven: Yale University Press.
- Lakoff, G., and M. Johnson. 1999. *Philosophy in the flesh: the embodied mind and its challenge to Western thought*. New York: Basic Books.
- Lakshmana, C. 1973. *Caste dynamics in village India*. Bombay: Nachiketa Publications.
- Lamba, S. and D. Spears. 2013. Caste, 'cleanliness' and cash: effects of caste-based political reservations in Rajasthan on a sanitation prize. *Journal of Development Studies* 49(11): 1592–1606.

- Latour, B. 1993. *We have never been modern*. Cambridge: Harvester Wheatsheaf.
- Latour, B. 2004. *The politics of nature: how to bring the sciences into democracy*. Cambridge, MA: Harvard University Press.
- Lizardo, O. 2012. The conceptual bases of metaphors of dirt and cleanliness in moral and non-moral reasoning. *Cognitive Linguistics* 23(2): 367–393.
- Lutsky, K. and S. Burkholder. 2017. [Curious methods](#). *Places Journal* May.
- Mahapatra, S. 2009. The explosion of the middle class. In N. Chandhoke and P. Priyadarshi (eds.) *Contemporary India: economy, society, politics*. Noida: Pearson Education India. Pp. 121-139.
- Marglin, F. 1977. Power, purity and pollution. *Contributions to Indian Sociology* 11(2): 245–270.
- Mathur, K.S. 1964. *Caste and ritual in Malwa village*. New York: Asia Publishing House.
- Mayer, A. 1960. *Caste and kinship in Central India: a village and its region*. Berkeley: University of California Press.
- Mendelsohn, O., and M. Vicziany. 1998. *The untouchables: subordination, poverty and the state in modern India*. Cambridge: Cambridge University Press.
- Mishra, D.K. 1997. The Bihar flood story. *Economic and Political Weekly* XXXII(35): 2206–2217.
- Mishra, D.K. 1999. The flood protection that never was. *Economic and Political Weekly* XXXIV(29): 2013–2017.
- Mishra, D.K. 2000. Inundated by excuses. *Down To Earth* 9(8).
- Mishra, D.K. 2002. *Living with the politics of floods*. Dehradun: People's Science Institute.
- Mishra, D.K. 2003. Life within the Kosi embankments. *Water Nepal* 9-10: 277–301.
- Mishra, D.K. 2008a. Of deluge, candles and matchboxes. <http://www.indiawaterportal.org/articles/deluge-candles-and-matchboxes>.
- Mishra, D.K. 2008b. *Trapped! Between the devil and deep waters*. Dehradun and New Delhi: Peoples Science Institute and SANDRP.
- Mishra, D.K. 2012a. [Resuscitating a failed idea: notes from Bihar](#). *Economic and Political Weekly* XLVII: 48–51.
- Mishra, D.K. 2012b. *River Bagmati: bounties become a curse*. Dehradun: People's Science Institute SANDRP.
- Mishra, D.K. and B.M. Abhiyan. 2007. [Bihar floods of 2007: some lessons for everyone](#). *Dams, Rivers and People*. Nov-Dec: 1–5.
- Moser, W. 2017. The acculturation of waste. In B. Neville and J. Villeneuve (eds.). *Waste-site stories: the recycling of memory*. Albany: SUNY Press. Pp. 85–106.
- Mosse, D. 2003. *The rule of water: statecraft, ecology, and collective action in South India*. New Delhi: Oxford University Press.
- Mosse, D. 2004. *Cultivating development: an ethnography of aid policy and practice*. London: Pluto Press.
- Muehlmann, S. 2013. *Where the river ends: contested indigeneity in the Mexican Colorado delta*. Durham: Duke University.
- Mukherjee, R. 1999. Caste in itself, caste and class, or caste in class. *Economic and Political Weekly* 34(27): 1759–1761. [Republished](#) *Journal of World Systems Research* 2000, 6(2): 332-339.
- Nagle, R. 2013. *Picking up: on the streets and behind the trucks with the sanitation workers of New York City*. New York: Farrar, Straus and Giroux.
- Newell, S. 2012. *The modernity bluff: crime, consumption, and citizenship in Côte d'Ivoire*. Chicago: University of Chicago Press.
- O'Reilly, K. 2010. Combining sanitation and women's participation in water supply: an example from Rajasthan. *Development in Practice* 20(1): 45–56.
- Ogden, L. 2011. *Swamplife: people, gators, and mangroves entangled in the Everglades*. Minnesota: University of Minnesota Press.

- Pai, S. 2002. *Dalit assertion and the unfinished democratic revolution: the Bahujan Samaj Party in Uttar Pradesh*. New Delhi: Sage.
- Pandian, A. 2009. *Crooked stalks: cultivating virtue in South India*. Durham: Duke University Press.
- Parmentier, R. 1994. *Signs in society: studies in semiotic anthropology*. Bloomington: Indiana University Press.
- Parry, J.P. 1979. *Caste and kinship in Kangra*. London: Routledge and Kegan Paul.
- Peet, R. and M.J. Watts (eds.). 2004. *Liberation ecologies: environment, development, social movements*. London: Routledge.
- Puri, J. 1999. *Woman, body, desire in post-colonial India: narratives of gender and sexuality*. London: Routledge.
- Rademacher, A. 2011. *Reigning the river: urban ecologies and political transformation in Kathmandu*. Durham: Duke University Press.
- Rap, E. 2006. The success of a policy model: irrigation management transfer in Mexico. *The Journal of Development Studies* 42(8): 1301–1024.
- Reno, J. 2016. *Waste away: working and living with a North American landfill*. Oakland: University of California Press.
- Robbins, P. 2004. *Political ecology: a critical introduction*. Oxford: Blackwell.
- Rocheleau, D.E. 2008. Political ecology in the key of policy: from chains of explanation to webs of relation. *Geoforum* 39: 716–727.
- Sagar, S.L. 1975. *Hindu culture and caste system in India*. Delhi: Upper Book Store.
- Saikia, A. 2011. Ecology, floods, and the birth of an agrarian regime: the political economy of the River Brahmaputra in late twentieth-century Northeast India. In *American Historical Association Conference Proceedings*.
- Sartre, J.P. 1984. *Being and nothingness*. New York: Washington Square Books.
- Seager, J. 2006. [Noticing gender \(or not\) in disasters](#). *Geoforum* 37(1): 2–3.
- Serres, M. 1982. *The parasite*. Baltimore: Johns Hopkins University Press.
- Seuss, Dr. 1949. *Bartholomew and the Oobleck*. New York: Random House.
- Shipton, P. 1994. Land and culture in tropical Africa: soils, symbols, and the metaphysics of the mundane. *Annual Review of Anthropology* 23: 347–377.
- Sillitoe, P. 1998. Knowing the land: soil and land resource evaluation and indigenous knowledge. *Soil Use and Management* 14(4): 188–193.
- Singh, P. 2008. The colonial state, *Zamindars* and the politics of flood control in North Bihar (1850-1945). *Indian Economic and Social History Review* 45(2): 239–259.
- Singh, P. 2011. Flood control in North Bihar: an environmental history from the 'ground-level' (1850-1954). In D. Kumar, V. Damodaran and R. D'Souza (eds.) *The British Empire and the natural world: environmental encounters in South Asia*. New Delhi: Oxford University Press. Pp. 160-180.
- Smith, V. 2008. *Clean: a history of personal hygiene and purity*. Oxford: Oxford University Press.
- Sosna, D. and L. Brunclíková. 2017. *Archaeologies of waste: encounters with the unwanted*. Oxford: Oxbow Books.
- Star, S. and J. Griesemer. 1989. Institutional ecology, 'translations' and boundary objects: amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science* 19(3): 387–420.
- Sultana, F. 2010. [Living in hazardous waterscapes: gendered vulnerabilities and experiences of floods and disasters](#). *Environmental Hazards* 9: 43–53.
- Tarlo, E. 1996. *Clothing matters : dress and identity in India*. Chicago: University of Chicago Press.
- Veblen, T. 1899. *The theory of the leisure class*. New York: The New American Library.

- Weiner, A. 1976. *Women of value, men of renown: new perspectives in Trobriand exchange*. Austin: University of Texas Press.
- Winner, L. 1986. Do artefacts have politics? In L. Winner (ed.) *The whale and the reactor. a search for limits in an age of high technology*. Chicago: University of Chicago Press. Pp. 19–39.
- Witsoe, J. 2011. Rethinking postcolonial democracy: an examination of the politics of lower-caste empowerment in North India. *American Anthropologist* 113(4): 619–631.
- Wolf, E.R. 1982. *Europe and the people without history*. Berkeley and Los Angeles: University of California Press.