

Magic, explanations, and evil: On the origins and design of witches and sorcerers

Manvir Singh

Department of Human Evolutionary Biology, Harvard University

6 August 2018

Abstract

In nearly every documented society, people believe that some misfortunes are attributable to malicious group mates employing magic or supernatural powers. Here I report cross-cultural patterns in these beliefs and propose a theory to explain them. Using the newly-created Survey of Mystical Harm, I show that several conceptions of evil, mystical practitioners recur around the world, including sorcerers (who use learned spells), possessors of the evil eye (who transmit injury through their stares and words), and witches (who possess superpowers, pose existential threats, and engage in morally abhorrent acts). I argue that these beliefs develop from three cultural selective processes – a selection for effective-seeming magic, a selection for plausible explanations of impactful misfortune, and a selection for demonizing myths that justify mistreatment. Separately, these selective schemes produce traditions as diverse as shamanism, conspiracy theories, and campaigns against heretics – but around the world, they jointly give rise to the odious and feared witch. I use the tripartite theory to explain the forms of beliefs in mystical harm and outline ten predictions for how shifting conditions should affect those conceptions. Societally-corrosive beliefs can persist when they are intuitively appealing or serve some believers' agendas.

“I fear them more than anything else,” said Don Talayesva about witches.¹ By then, the Hopi man suspected his grandmother, grandfather, and in-laws of using dark magic against him.

1. Introduction

Beliefs in witches and sorcerers are disturbing and calamitous. Sterility, illness, death, rainstorms, burnt-down houses, bald spots, attacks from wild animals, lost foot races, lost reindeer races, the puzzling behavior of a friend or spouse – the enigmatic, the impactful, the bothersome – all can spark suspicions of neighbors using magic and dark powers; all can precipitate violence. The suspects are sometimes normal humans, learned in dark magic, but other times, rumored to be odious and other. They devour babies, fornicate with their menstruating mothers, and use human skulls for sports. They become bats and black panthers, house pythons in their stomachs, and direct menageries of attendant nightbirds. They plot the destruction of families and then dance in orgiastic night-fests.²

Humans in nearly every documented society attribute some illness and hardship to the mystical machinations of envious or malignant group mates. In Hutton’s (2004; 2017) review of ethnographies from three hundred non-European societies, he observed pervasive beliefs in malicious magicians. Many societies believed in sorcerers and witches, but those that did not commonly suspected other sources of mystical harm, such as the evil eye and aggressive shamans in rival groups. Of those societies in the Probability Sample File of the Human Relations File—a pseudo-random sample of well-documented human societies—59 out of 60 described some form of human-induced, mystical harm, the only exception being the Kogi of Colombia³ (sect. 2). European societies have held similar beliefs, embodied in the Roman *strix*

¹ The quotation comes from autobiography of Don Talayesva (Talayesva and Simmons 1942:379).

² That beliefs in witches are disturbing is exemplified by quotes by Don Talayesva (opening) and the Santal guru Kolean Haram (section 3). That they are calamitous is showcased in the destruction mentioned in section 3. Table 3 and section 6.2.1 describe the events that trigger suspicions of mystical harm. Table 4 features examples of animal transformations and attendants. Yamba witches were said to devour children (Gufler 1999), Apache witches had sex with menstruating family members (Basso 1969), Akan witches used human skulls for soccer (Debrunner 1961), and Santal witches met naked in nighttime assemblies, danced, and copulated with their spirit familiars (Archer 1974). Pythons lived in the bellies of Nyakyusa witches (Wilson 1951).

³ The ethnographic texts included in eHRAF did not describe beliefs in mystical harm for two societies in the PSF: Koreans and the Kogi. However, researchers elsewhere have reported a history of sorcery beliefs in Korea extending into the twentieth century (Walraven 1980), so their omission seems due to ethnographers underreporting malicious magic. Meanwhile, Reichel-Dolmatoff explicitly stressed the absence of beliefs in mystical harm among the Kogi. He wrote, “There are no evil mamas [priests], no witch doctors or practitioners of aggressive magic; they only exist in myths and tales of imagination, as threatening examples of what could be” (Reichel-Dolmatoff 1976:286). Elsewhere, he made a similar comment about sorcery more generally (Reichel-Dolmatoff 1997:141). Nevertheless, in describing Kogi lineages, he made a vague comment suggesting that people do in fact believe in mean-spirited,

(Oliphant 1913; Oliphant 1914), the Saxon *striga* (Cohn 1976), and most famously, the witches of the Great European Witch Hunt (Cohn 1976), and colonial New England (Karlsen 1987).

In this paper, I refer to people believed to use magical methods or supernatural powers to injure others as *practitioners of mystical harm*.⁴ This term is broad, encompassing conceptions of, for example, people whose envious stares transmit illness, individuals who become animals and wreck havoc, and heinous magicians who fly and mutilate the corpses of children. By *magic*, I mean any method that has no actual causal bearing on its intended outcome, equivalent to the term *superstition* as used in the evolutionary and psychological literatures (Foster and Kokko 2009; Skinner 1948; Vyse 2014). Magic, including rites, manipulated objects, and recited spells, can be used to produce socially-justified ends, such as healing people, calling rain, or succeeding in gambling, as well as less acceptable objectives, such as inducing illness. I use *sorcery* to mean any magic practiced to produce misfortune. Methods of sorcery include creating and manipulating voodoo dolls, placing charmed poisons in people's paths to transmit illness, and inflicting curses.

Sorcerers are people presumed to use sorcery – that is, people who deploy magic for malicious ends. *Witches*, on the other hand, exhibit up to three sets of characteristics: (1) They pose existential threats, such as by causing epidemics or conspiratorially plotting to harm society, (2) they have supernatural powers, such as invisibility, flight, and animal transformation, and (3) they are morally repugnant, engaging in acts such as cannibalism and the desecration of corpses. Practitioners vary in how witchy they are. I justify these definitions and review differences between them in my discussion of cross-cultural patterns in section 2.

Aside from being blamed for disease and calamity, practitioners of mystical harm exhibit profound similarities among cultures that almost surely lacked recent contact (Needham 1978; Kluckhohn 1959). The European witches of the late modern period were notorious for consuming human flesh, engaging in lewd, sexual acts, and assembling in conspiratorial, orgiastic nighttime gatherings (Cohn 1976). Similar features characterize the witches of the Yamba of Cameroon (Gufler 1999), the Santal of South Asia (Archer 1984), and the Navajo of the American Southwest (Kluckhohn 1944), among many others (Hutton 2017; Mair 1969; see sect. 2).

Other striking parallels exist as well. Hutton (2017:268) observed that an association between malicious magicians and animals “is found so widely on the earth... as to represent one way in which humans who believed in witches thought easily and spontaneously about

uncanny harm: “Both groups, the Hukúkui as well as the Mitamdú, are further regarded as vaguely dangerous and endowed with rather evil powers” (Reichel-Dolmatoff 1997:250).

⁴ I choose the term *mystical* to refer to harm that is transmitted either through magical means (e.g., spells, buried poisons, voodoo dolls) or supernatural powers (e.g., transforming into an animal and attacking someone, inflicting misfortune through an inadvertent, envious stare) following similar uses by Evans-Pritchard (1937), who contrasted *mystical causation* with *natural causation*, and Needham (1978:26), who defined a *witch* as “someone who causes harm to others by mystical means,” corresponding closely with my term *practitioner of mystical harm*.

them.” And just as people worldwide believe in sensational and atrocious witches, they also often suspect that sickness and death are the work of ordinary people practicing learned dark magic (e.g., Trobriand Islanders: Malinowski 1922; Tswana: Schapera 1952; Niimípuu: Walker, Jr. 1967).

The ubiquity of these beliefs and their striking similarities raise two basic questions:

1. Why do humans believe in mystical harm?
2. Why do those beliefs take the form that they do?

This paper advances a tripartite theory to answer those questions. I propose that beliefs in mystical harm – and conceptions of who orchestrates it – are the result of three cultural selective processes:

1. *Selection for intuitive magic.* As people try to influence others’ misfortune, they selectively retain intuitive magic, producing compelling spells and charms for harming others. This produces intuitive, harmful magic, but more relevantly, it convinces individuals that sorcery works and that their group members practice it.
2. *Selection for plausible explanations of misfortune.* People who feel threatened are more likely to blame unexplainable misfortunes on distrusted group members. As they consider how those individuals harmed them afar, they preferentially adopt the most plausible explanations. When people suspect that others practice sorcery, this can produce fears of sorcerers who cause illness, although it can also lead to beliefs that do not include spells or charms, such as werewolves and the evil eye.
3. *Selection for demonizing narratives.* Actors bent on eliminating rivals concoct sensational myths to justify the rivals’ mistreatment. These demonizing campaigns often target and transform malicious practitioners, both because they are suspected of transmitting harm and because people accused of mystical harm are easily demonized and removed.

On their own, these three schemes maintain beliefs and practices as varied as gambling superstitions, conspiracy theories, and vitriolic campaigns against heretics – but in societies around the world, they combine to produce the archetypal, odious image of the witch.

This paper is structured as follows. In section 2, I report cross-cultural patterns in beliefs about mystical harm before reviewing theories to explain them in section 3. I spend section 4 introducing cultural selection and the tripartite theory. I then elaborate on the three hypothesized processes in sections 5, 6, and 7. Section 8 concludes the paper: I lay out how the cultural selective schemes, either in combination or alone, produce such dissimilar conceptions of evil practitioners and then list ten predictions derived from the theory for how these beliefs should vary with shifting circumstances.

2. Cross-cultural patterns

Researchers struggle over whether beliefs about evil practitioners are similar around the world. Many have emphasized commonalities (e.g., Mair 1969; Kluckhohn 1959), but others have criticized comparisons, one scholar commenting that beliefs are so dissimilar from one

society to the next that “anthropologists have committed a possibly grave error in using the same term for other cultures” (Crick 1973:18).

The most important effort in investigating cross-cultural patterns in these beliefs was conducted by Hutton (2002, 2004, 2017). Hutton (2017) reviewed studies of beliefs in malicious practitioners in three hundred extra-European societies and identified five characteristics that malicious magicians around the world share with the early modern European conception of the witch. Namely, they tend to (1) cause harm using non-physical, “uncanny” methods, (2) represent internal threats to their communities, (3) gain their abilities through training or inheritance, (4) have qualities that incite horror and loathing, and (5) give rise to strategies of resistance, including counterspells and murderous campaigns. Hutton also reviewed ethnographic descriptions showcasing, among other things, similarities in heinousness, the frequency and nature of witch-animal associations, and the shifting social conditions that incite violence towards suspected sorcerers and witches.

Despite his project’s ambitiousness, Hutton sampled societies opportunistically, which can be subject to overrepresenting ethnographically interesting instances. He also failed to systematically code traits across societies, such as the frequency or form of practitioner-animal associations. These limitations prevent the project from drawing strong inferences about how these beliefs compare around the world.

I designed the Survey of Mystical Harm (SOMH) to systematically capture beliefs about mystical harm from a representative sample of the world’s societies. The dataset covers the sixty societies of the Probability Sample File of the Human Relations Area Files, a pseudo-random sample of cultures, selected to make inferences about humanity more generally (see the Supplementary Materials for more details). The full dataset is available at osf.io/492mj [*data will be made available at time of publication*] and includes beliefs about 103 malicious practitioners (or practices) from 58 societies. The analyses reported here exclude leaders (e.g., elders, chiefs, senior lineages) and public magicians (e.g., shamans, priests) because, rather than being suspicious beliefs about group mates causing misfortune, these represent public, institutionalized classes who advertise and perform their powers.

I used Principal Components Analysis to reduce the 49 raw variables composing the SOMH (e.g., does a practitioner consume flesh? do they cause economic harm?) to two derived variables (principal components), shown in Figure 1 (see Supplementary Materials for details). This method exposes the underlying axes along which practitioners vary the most, exposing the cross-cultural structure of these beliefs. Both of the derived variables are interpretable: The first dimension represents how witchy malefactors are; the second distinguishes sorcerers, as classically understood, from the evil eye.

ON THE ORIGINS AND DESIGN OF WITCHES AND SORCERERS

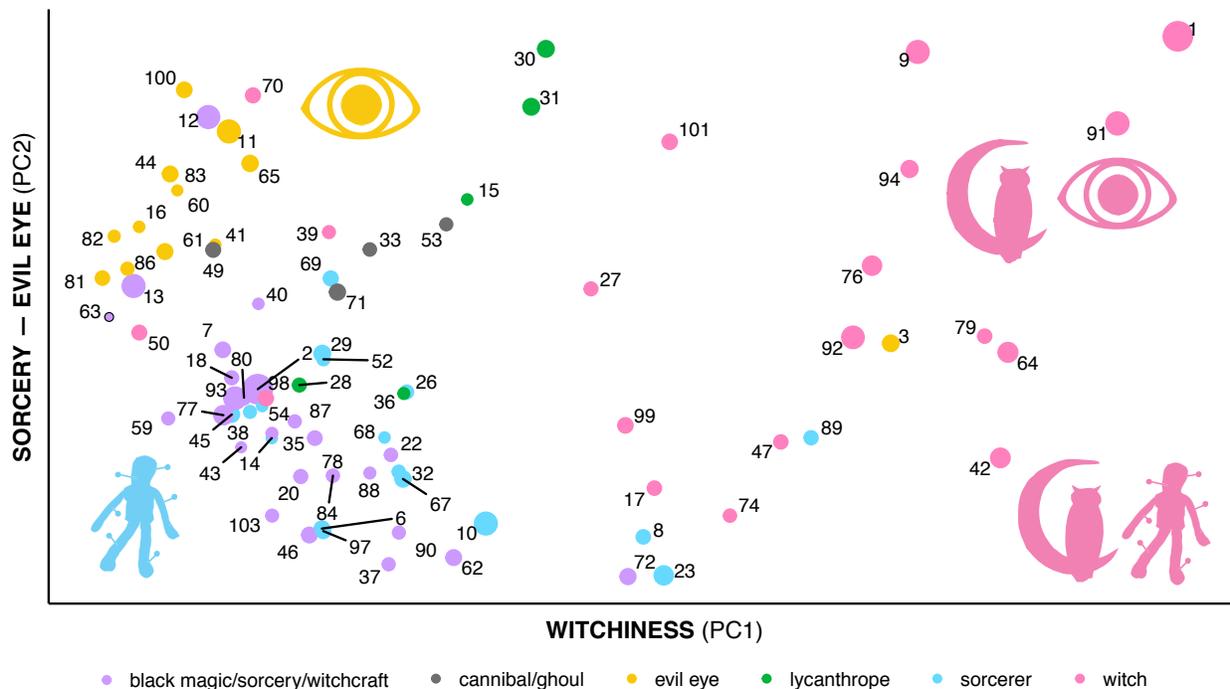


Figure 1. Results of logistic PCA showing practitioners of mystical harm. Practitioners are colored according to the terms used by the ethnographer(s) who described them. The size of a point denotes the number of paragraphs coded in that society (e.g., a larger point means more paragraphs were tagged for mentioning sorcery), while numbers correspond to unique practitioner ID numbers (see Supplementary Table 1). The images signify the features that characterize a given quadrant: eye = evil eye (unintentional harm through stares or words); effigy = sorcery (learned magic); owl = witchiness (superhuman abilities, moral abhorrence, threat).

Practitioners high on the first variable (PC1) are witches. They are believed to eat human flesh, transform into animals or use them as familiars, fly, congregate in secretive meetings, commit atrocities at night, desecrate corpses, cause catastrophes and many other misfortunes, use learned magic, and gain their abilities hereditarily; people visit them to inflict harm on others (see Supplementary Table 2 for loadings). Practitioners low on this dimension lack these qualities. Contrary to many writers’ impressions (e.g., Chaudhuri 2012; Mace et al. 2018; Sanders 1995), I did not find strong evidence that witches are more frequently women than men (variables coding both sexes load positively but weakly on PC1; SEX1 [women]: 0.050; SEX2 [men]: 0.030).

The second derived variable (PC2) separates sorcerers from the evil eye. Practitioners low on PC2 tend to use spells and charms, learn their magical methods, and work with spirits to do harm. People often suspect that any fellow group member, including a shaman or public magician, might engage in these malicious practices, although men are suspected more frequently than women. Practitioners high on PC2, in contrast, tend to harm people unintentionally through their stares and comments. Their powers are not gained through learning or training but instead derive from physiological differences, such as special eyes.

A surprising finding is that practitioners high on PC2 also tend to eat human flesh – but this seems more characteristic of lycanthropes (humans who become animals), ghouls, and cannibals than the evil eye (see Supplementary Table 3 for analyses when excluding lycanthropes and cannibals/ghouls). Nighttime shape-shifters and cannibals appear close to the evil eye in Figure 1, likely because they do not use sorcery, they do not learn their methods, and they lack most other witchy qualities.

In Figure 1, I colored the practitioners according to the ethnographer’s name for that practitioner or class. These colors cluster, showing that terms like “sorcerer” or “witch” in fact capture cross-culturally recurrent classes. Sorcerers (blue) are normal humans who master magic to intentionally harm others. They overlap with unnamed practitioners (in purple), suggesting that conceptions of sorcerers are similar to general beliefs about people knowing and using dark magic. Possessors of the evil eye (yellow) harm people with their words and stares, often unintentionally. They do not employ spells, and their powers tend to be inborn rather than actively procured. Witches (pink) are much more variable across societies, but they share up to three sets of traits: (1) They are threatening (e.g., they cause catastrophes and conspire in secret, nighttime meetings), (2) they are supernaturally powerful (e.g., they fly and transform into animals), and (3) they are abhorrent (e.g., they consume human flesh and desecrate corpses).

The analysis helps reconcile a historic debate about the difference between witches and sorcerers. Evans-Pritchard (1937) drew a strict boundary between the two, specifying that malicious practitioners are *either* normal humans who use magic (sorcerers) or different entities who do not use magic, instead attacking with supernatural powers (witches). Evans-Pritchard used the dichotomous scheme to describe Azande belief in particular, but other anthropologists applied the same typology to different ethnographic contexts (e.g., Reynolds 1963). Prominent ethnographers criticized the general application of this scheme, observing that witchy practitioners frequently employ magical techniques while harmful magicians can inherit special, inborn powers (Turner 1964). Nevertheless, some anthropologists continue to argue for the dichotomy’s validity (e.g., Eves 2013; Kapferer 2002).

Figure 1 reveals that Evans-Pritchard’s witch-sorcerer binary does not generalize. Some heinous, supernaturally powerful practitioners (witches) only attack with stares and thoughts, such as those of the Azande (9) and Akan (1), but many are believed to also employ spells, charms, and other material magic. They might stuff effigies into the carcasses of dead puppies (Tlingit: De Laguna 1972:730) or recite memorized spells to fly (Trobriand Islanders: Malinowski 1922:241) or use horseshoes and keys to conjure evil spirits (Colonial New England: Karlsen 1987:9). Thus, witches resemble other malicious practitioners, such as sorcerers or possessors of the evil eye, except transformed along a dimension of witchiness, being made more threatening, more abhorrent, and more supernaturally powerful.

3. Existing theories of mystical harm

The most influential and long-standing theories of mystical harm attribute a function to these beliefs, typically regarding them as group-level adaptations. Most popular is the theory that

these beliefs discourage socially unacceptable behavior, both through the fear of being attacked and through the fear of being accused (Whiting 1950; Beattie 1963; Walker, Jr. 1967).

Faulkingham (1971:112) summarized the social control theory in writing about sorcery beliefs among the Hausa (Niger): “Sorcery beliefs in Tudù provide people with strong motivations to be gregarious and to avoid quarrels. One is hesitant to be silent, alone, or bickering, lest he be accused of being a sorcerer. Further, people are reticent to exacerbate quarrels, for they may become ensorcelled.” But he also recognized that holding these beliefs entails major costs: “While sorcery beliefs have these social control functions, I believe that the villagers pay a high psychological price, since hostile emotions are relentlessly proscribed” (Faulkingham 1971:112).

Other researchers have echoed Faulkingham’s second point, disputing group-functional accounts by noting how sorcery and witchcraft beliefs sow distrust and provoke quarreling (Gershman 2016; see Hutton 2017:35 and works cited therein). Among the Kapauku Papuans, most wars in one region (Mapia) started because of presumed sorcery; in another (Kamu), sorcery accounted “for about thirty per cent of the conflicts” (Pospisil 1958:154). Other examples of societies where sorcery and witchcraft accusations bred wanton violence abound (e.g., Gebusi: Knauft 2010; Yolngu: Warner 1958; Rajputana: Skaria 1997; Zulus: Bryant 1929; Sukuma: Mesaki 1994). Suspicions of magical harm can even inspire vitriol among family members, such as when a Klamath woman slayed “her own mother for the fatal bewitchment of her child” (Stern 1965:21). An ethnographer quoted the Santal (South Asia) guru Kolean Haram, who summarized the sociological and psychological stresses of witchcraft beliefs: “The greatest trouble for Santals is witches. Because of them we are enemies of each other. If there were no witches, how happy we might have been” (Archer 1984:482).

Another criticism of cooperation theories is that other supernatural agents, such as punitive, moralistic deities (Norenzayan 2013), seem to promote cooperation without breeding in-group feuding and suspicion. Among the Mentawai people of Siberut Island (Indonesia), for example, sorcery beliefs exist alongside several cooperation-inducing supernatural entities, including a crocodile spirit that punishes stinginess (Schefold 1988). It seems unlikely that fears of sorcery, the evil eye, and witches would develop to promote cooperation when other belief systems can encourage prosociality without the corresponding costs.

A second set of hypotheses argues that beliefs in malicious magic fulfill one of several psychological functions. The most influential among these posits that beliefs in mystical harm provide explanations for anxiety-inducing, incomprehensible events (Evans-Pritchard 1937). I borrow elements from this hypothesis, but as currently formulated, it fails to satisfactorily explain much about these beliefs (Needham 1978). First, why suspect mystically powerful neighbors when one can already blame gods, water demons, and the many other forces that populate enchanted worldviews? Second, even accepting that people suspect that group mates cause misfortune, why should they presume that they use spells and charms? Third, how do these suspicions relate to the many other common beliefs about malicious practitioners, such as animal transformation and corpse mutilation?

Finally, many researchers connect beliefs in malicious magic to sociological events, such as the envy, inequality, and redistributions of power associated with social change (Comaroff and Comaroff 1999; Bohannan 1958), the control of women (Hester 1992; de Blécourt 2000; Natrella 2014), and scapegoating associated with widespread anxiety (Oster 2004). But these accounts remain atomized and disconnected. They focus on single determinants (such as patriarchy), most of which only apply in some circumstances, while failing to explain most features commonly associated with these beliefs.

I have left out many other explanations for beliefs in witchcraft and sorcery, including ones that invoke repressed sexual impulses (Cohn 1976), distorted perceptions of existing or historic cults (Murray 1921), the inadvertent consumption of ergot fungi (Caporael 1976; Alm 2003), and delusions stemming from psychiatric illness (Field 1970). These accounts suffer from many of the same criticisms as those reviewed above: They fail to explain cross-cultural patterns in the form of beliefs, they fail to ground those beliefs in basic human psychological tendencies, and they cannot explain variation in those beliefs or the conditions that elicit some beliefs but not others.

4. Introducing the tripartite theory: Cultural selection

I propose that beliefs about mystical harm develop from the interaction of three cultural selective schemes. A *cultural selective scheme* is a process in which people preferentially retain particular practices or beliefs over time, such as because they appear to more effectively produce a desired outcome. For example, I discuss at length what I call *a selection for demonizing narratives*, which occurs when people preferentially adopt and spread heinous portrayals of a target group to justify mistreating them.

Many scholars assume that cultural selective processes are protracted, involving generations and many individuals, but they don't have to be. Yes, selective processes can occur over many generations – the evolution of heinous myths about Jews occurred over decades as people throughout Europe borrowed and modified each other's existing productions (Cohn 1967). But they can also occur on very short time-scales with many fewer participants, such as if several people concoct and maintain heinous myths about a feared sub-group in the hours or days following a catastrophe.

Cultural selective processes are significant for two reasons. First, they produce complex traditions that a single individual in a single moment could not devise. But just as importantly (although less frequently appreciated), they *retain* those traditions, stitching them into people's worldviews. For example, I will argue that a selection for plausible explanations produces beliefs about group mates using mystical powers to harm each other. This maintains beliefs in sorcerers, the evil eye, and other malicious practitioners, so when things go wrong, those practitioners become immediate suspects.

I propose that beliefs in mystical harm develop from three cultural selective schemes that produce and maintain, respectively, intuitive techniques of harmful magic, explanations of misfortune, and myths to demonize and mistreat a subgroup (see Table 1). The three proposed cultural schemes occur under different circumstances and frequently act

independently of each other, separately producing superstitions, conspiracies, and propaganda. But as I argue in the remainder of the paper, they also interact and develop each other's products, giving rise to beliefs in sorcerers, the evil eye, lycanthropes, and the abhorrent witch. In the following sections, I elaborate on each of these selective processes.

Table 1. The three cultural selective schemes responsible for beliefs in practitioners of mystical harm.

CULTURAL SELECTIVE SCHEME (what is being selectively retained)	CONTEXTS	CONSEQUENT FEATURES OF BELIEFS IN MYSTICAL HARM
Intuitive magic (effective-seeming interventions for harming or killing others)	Nearly always	Sympathetic magic (contagion, similarity)
Plausible explanations (explanations for impactful misfortune)	Following unexplainable, harmful misfortune, especially when people are distrustful or persecuted	Impactful and otherwise unexplainable harm; personality of malicious magicians; associated animals
Demonizing narratives (narratives that justify and urge mistreatment of a target group)	Influential individuals aim to remove a sub-group; times of stressful uncertainty	Threat (e.g., conspiratorial organization); violation of sacred values (e.g., cannibalism, desecration of corpses)

5. Magic

Figure 1 shows that many suspect that their misfortunes are caused by other people using spells and charms. Why do people accept that harmful magic works and suspect that other people use it? In this section, I argue that these convictions develop from of a *selection for intuitive magic*.

5.1. The selective retention of intuitive magic

5.1.1. People adopt superstitions (magic) to influence significant outcomes that are random and uncontrollable

Rubbing rocks before giving speeches, wearing special underwear during football matches, blowing on dice before letting them roll – we regularly use superstitions to nudge uncertainty in our favor. Humans adopt *magic* or *superstitions*, which I defined as interventions that have no causal bearing on their intended outcome, when those outcomes are important (roughly, fitness-relevant) and occur randomly (Ono 1987; Keinan 2002; Malinowski 1948). Such outcomes include victory in war, the arrival of rain, recovery from illness, and rivals becoming

sick, dying, or suffering economic loss. That we adopt superstitions under these conditions seems a consequence of a kind of bet-hedging psychology: When the costs of an intervention are sufficiently small relative to the potential benefits, and when the outcome seems to occur sometimes after the intervention, individuals benefit on average from adopting those interventions (Beck and Forstmeier 2007; Foster and Kokko 2009; Johnson et al. 2013; McKay and Efferson 2010). The predisposition to adopt superstitions to control uncertainty provides the basis for magical practices across human societies (Vyse 2014), including, I propose, magic for harming others.

5.1.2. People selectively retain magical interventions that seem the most effective

Humans have innate and cultural intuitions which predispose us to regard some magical techniques as more effective than others (Legare and Souza 2012). Consider, for example, two options for harmful magic, one which involves throwing a lemon in the air and reciting giddy pop music, the other demanding that you pluck a hair from the target and burn it in a hot fire with snake venom and centipede fangs. The second uses a form of causality deemed more effective by humans everywhere (contagion; see Apicella et al. 2018; Frazer 1920), so people will likely intuit this technique to be more potent. As magic-users repeat this decision process over time, and as they innovate to develop new techniques, they produce increasingly intuitive magic. Shared notions of efficacy and causality should in turn produce similarities in magical techniques around the world (e.g., Nemeroff and Rozin 2000; Rozin et al. 1986), discussed below.

5.2. Ethnographic evidence for intuitive magic

At its basis, a selection for intuitive magic demands that people actually attempt to harm each other using magical means. It also predicts that magic will be intuitive and effective-seeming and that common intuitive principles will characterize both harmful magic and other superstitions. Both claims find support in the ethnographic record.

5.2.1. People attempt harmful magic

People are notoriously reticent about discussing harmful magic with ethnographers, let alone admitting to using it (e.g., Ames 1959:264; Nadel 1954:164). Nevertheless, researchers have successfully documented direct and indirect evidence of people using private sorcery. During his time with the Azande, Evans-Pritchard discovered two bundles of bad medicine in one of his huts. One was engineered “to destroy the popularity of the settlement where I lived by killing some people and making the rest afraid to remain there” (Evans-Pritchard 1937:402). The other was planted to kill the anthropologist. Richards (1935) examined the magical horns collected in a Bemba village during a witch-hunting movement in what-is-now Zambia. Although the vast majority were harmless medicine containers, “11 out 135 horns were admitted by every one to be undeniably bad destructive magic, that is to say, prepared for the injury of others” (Richards 1935:453). Researchers report other examples such as these (e.g.,

Anglo-Saxon England: Crawford 1963; Wogeo: Hogbin 1938:231; Tlingit: Emmons and De Laguna 1991:410), although people’s admissions of using sorcery and even accounts of other people discovering evidence are difficult to interpret because of deception and framing.

Less contestable evidence comes from observations of specialists selling services and of magicians or laypeople performing malefice to harm out-group enemies. Specialists sold their harmful services in 26 of the 58 societies coded in the expanded SOMH (including leaders and public magicians), while in at least 10 of those societies, practitioners used magic and supernatural powers to attack enemies of rival groups.

5.2.2. *Malicious magic is governed by the same, intuitive principles as other kinds of magic*

The strongest evidence that magic, both harmful and otherwise, develops from a selection for effective-seeming practices is that both are governed by the deeply intuitive principles of sympathetic magic.

Sympathetic magic refers to two causal principles – *the law of contagion* and *the law of similarity* (or *homeopathy*) – which characterize magical practices around the world (Frazer 1920). The law of contagion refers to the pervasive, implicit belief that “physical contact between [a source object] and [a target object] results in the transfer of some effect or quality (essence) from the source to the target” (Nemeroff and Rozin 2000:3). This principle encompasses contamination or pollution, when a negative substance qualitatively changes a target object, as well as notions that acting on a part (for example, on a lock of hair) can have an effect on the whole (for example, the person who once owned it). That we wrongly but so frequently believe in contagious magic seems in part a misfiring of psychological mechanisms evolved for noting contamination and illness transmission and perhaps overinterpreting the lingering effects of objects on each other (Rozin and Nemeroff 2002; Apicella et al. 2018). In contrast, the law of similarity or homeopathy refers to the impression that “things that resemble each other at a superficial level” – like a voodoo doll that resembles a person – “also share deeper properties” (Nemeroff and Rozin 2000:3) – for example, that acting on the doll produces effects on the imitated target. It remains unclear why people so habitually make this association, but as with the law of contagion, it likely reflects misfiring biases in causal reasoning..

Frazer (1920, Ch. III) famously documented examples of both magical principles around the world. Among his many cases of contagious magic, he noted that people often believe that one can act on some target by magically treating the impressions it leaves, such as footprints. Footprints feature in hunting magic, like when people locate the tracks of animals and doctor them to slow the target, as well as malicious traditions, which involve subjecting a target’s prints to evil methods to induce illness or bodily pain (see Table 2). Frazer (1920) also included many examples of similarity-based magic, including the belief that one can influence a person by creating and manipulating an effigy. Table 2 features examples of both malicious and non-malicious magic that uses effigies.

Table 2. Malicious magic is governed by the same intuitive principles of sympathetic causality that structure other kinds of magic. *Examples documented by Frazer (1920).

MAGICAL METHOD	EXAMPLES OF MALICIOUS MAGIC (societies with references)	EXAMPLES OF OTHER MAGIC (societies with references)
Treating the footprints of a target, such as to harm a person (malicious magic) or aid in the capture or warding off of animals (other magic)	*Chero *Maori Natinixwe (Wallace and Taylor 1950, pp. 189-90) Niimípu (Walker, Jr. 1967, p. 74) Siwai (Oliver 1955, p. 87) Tswana (Schapera 1952, p. 45)	Ainu (Munro 1963, p. 113) Azande (Lagae 1999, pp. 146-47) Fox (Jones 1939, pp. 23-24) *Khoikhoi *Nlaka'pamux Persians (Massé and Messner 1954, p. 282)
Manufacturing and treating an effigy, such as to injure a target (malicious magic) or induce birth or drive away neighbors (other magic)	Ancient Egyptians (Budge 1901, p. 75) Colonial New England (Karlsen 1987, p. 8) *Kenyah *Malay *Ojibwe Sami (Karsten 1955, pp. 43-44)	*Basotho Egyptians (Ammār 1954, p. 89) *Inuit *Japanese *Nisenan Pomo (Aginsky 1939, pp. 212-13)

6. Explanations

The selective of intuitive magic convinces people that evil magic is effective and that others may be doing it. How does this then transform into beliefs about sorcerers who cause harm?

In this section, I propose that, under certain circumstances, people's hypervigilant tendencies lead them to suspect group mates of causing inexplicable misfortunes. As they iteratively search for accounts of how those group mates harmed them, people fuel a *selection for plausible explanations of misfortune*. When they believe in the efficacy of sorcery, people may suspect and develop conceptions of sorcerers, although they may consider other means of transmitting harm, such as animal transformation, the evil eye, and even governmental conspiracies.

6.1. Selection for plausible explanations of misfortune

6.1.1. People suspect distrusted group members in the wake of impactful, negative outcomes

Whether we lose a wallet or observe an epidemic sweeping through our community, people commonly attribute impactful, hard-to-explain events, especially negative ones, to the wicked intentions of other humans (Tennen and Affleck 1990). These tendencies seem to have evolved to vigilantly recognize threat. Our social lives are marked by conflict, so we gain from tracing and anticipating when spiteful others harm us, even if it means making occasional mistaken attributions (see error management: Johnson et al. 2013; McKay and Efferson 2010).

A growing body of literature, most of it in the psychological sciences, shows that paranoid and conspiratorial thinking occurs most under four conditions:

- (1) A person feels threatened (Abalakina-paap et al. 1999; Mirowsky and Ross 1983; Saalfeld et al. 2018; Mashuri and Zaduqisti 2015);
- (2) They are distrustful of others (Abalakina-paap et al. 1999; Goertzel 1994; van Prooijen and Jostmann 2013; Raihani and Bell 2017);
- (3) They confront an event that is hard to explain (Rothschild et al. 2012; van Prooijen and Douglas 2017; van Prooijen and Jostmann 2013);
- (4) That event is impactful (van Prooijen and Douglas 2017; van Prooijen and van Dijk 2014; McCauley and Jacques 1979).

These conditions are illuminative for two reasons. First, they provide evidence for adaptive hypotheses of paranoid thinking. Individuals benefit from identifying malicious actors who conspire to harm them, so it seems reasonable that our psychology has evolved to seek out these individuals when they are most likely to harm us. Second, identifying these conditions generates predictions for the contexts under which people are most likely to develop beliefs in mystical harm. If some adaptive psychological machinery provides a psychological foundation for sorcery and witchcraft, then the conditions that trigger that psychology should in turn breed suspicions of mystical harm. I discuss these predictions in section 6.2.

6.1.2. People selectively retain plausible explanations for how group mates harmed them

Humans constantly seek explanations (Frazier, Gelman, and Wellman 2009; Lombrozo 2006). When your money-purse goes momentarily missing in a coffee shop and you suspect the wait staff or your fellow patrons, your mind considers the various ways by which they might have accomplished their misdeed. You deem some explanations likelier than others – for example, that it was stolen once rather than stolen and returned and then stolen again, or that it was stolen by the grungy crust-punk rather than by the well-to-do suburban family to his left. The process of inferring an explanation by comparing hypotheses against each other and selecting the best among them is known as “inference to the best explanation” (Harman 1965).

I have established that people suspect distrusted parties for paramount but mysterious misfortunes. I propose that as people consider how these suspected rivals harmed them, they selectively retain plausible explanations. That is, they preferentially choose the most plausible explanations of harm, spinning a more and more conceivable tale for how some heinous group-member abused them from afar. These explanations must repeatedly answer the question, “How it is that a group mate, likely with ill intents but in appearance a fellow human-being, harmed me unnoticed and from a distance?”

When people believe in the efficacy malicious magic (following section 5), it provides a sufficient and parsimonious answer, easily accounting for invisible, distant harm.

In societies without strong or pervasive beliefs in magic, this selective process still occurs, although it converges on different explanations. In his seminal analysis of paranoia in US politics, Hofstadter (1964) noted that people attribute troubles to all-powerful governments or the puppeteers controlling them, such as the Catholics, Free-Masons, and Illuminati. Barkun (2013) showed that these theories evolve. People borrow existing accounts, modify them to more parsimoniously explain events, and expand them to account for a wider

array of misfortune and mystery. Milton Cooper, for example, tweaked and synthesized existing theories about the Illuminati, the CIA, the Kennedy assassination, elusive black helicopters, scattered observations of cattle mutilations, claims of UFO abductions, and the AIDS epidemic. The capacity for his super-conspiracies to comprehensively explain both the momentous and the puzzling may account for their unparalleled appeal – as I write this, his 1991 book *Behold a Pale Horse* (Cooper 1991) is the best-selling book on “Ancient and Controversial Knowledge” on Amazon.com and the second best-seller in both “UFOs” and “Radicalism” (the book ranks 2,998th among all books, besting the highest-selling editions of *The Iliad*, *War and Peace*, and *Uncle Tom’s Cabin*).

Like contemporary superconspiracies, conceptions of mystical practitioners should develop into more compelling explanations, encompassing a wider array of inscrutable events while becoming more internally consistent and plausible.

6.2. Ethnographic evidence for plausible explanations of misfortune

I have argued that beliefs in mystical harm develop to explain how distrusted group-mates attacked a person from afar. At least two basic predictions follow: (1) Beliefs in mystical harm should track distrust and suspicions of harmful intent, and (2) evil practitioners should be believed to cause calamitous, negative events, especially ones for which people lack alternative explanations. Meanwhile, that these beliefs develop from a selection for the most plausible explanations clarifies why malicious practitioners so often associate with, and transform into, animals.

6.2.1. Accusations of mystical harm track distrust and suspicions of harmful intent

People who suffer calamity overwhelmingly suspect individuals with a presumed interest in harming them. Among the Azande, “A witch attacks a man when motivated by hatred, envy, jealousy, and greed... Therefore a Zande in misfortune at once considers who is likely to hate him” (Evans-Pritchard 1937:100). For the Trobriand Islanders, “the passions of hatred, envy, and jealousy” find “their expression in the all powerful sorcery of the *bwaga’u* [sorcerer] and *mulukwasi* [witch]” (Malinowski 1922:395). Many ethnographers studying other societies have made similar comments (e.g., Tlingit: De Laguna 1972:730; Tikopia: Firth 1954:114; Ona: Gusinde 1971:1102; Tukano: Reichel-Dolmatoff 1971:156-157; Pawnee: Weltfish 1965:337).

People regard envy in particular as a potent, malicious emotion. The above examples show how envious individuals are suspected of harboring malicious intent, but in societies everywhere, people believe that the emotion itself can transmit unintentional harm, such as through covetous stares (the evil eye) or jealous compliments (the blasting word) (Dundes 1992). This is likely because envy provokes malice. Individuals who experience envy (or at least one form of it: van de Ven 2016) are driven to injure better-positioned targets (Smith and Kim 2007; Miceli and Castelfranchi 2007) and even derive pleasure when envied persons suffer (van de Ven et al. 2015; Smith et al. 1996). A person who expresses envy betrays a desire to inflict harm, making them a key suspect after things go wrong.

6.2.2. *Mystical harm explains impactful and unexplainable misfortunes*

I argued that paranoid tendencies intensify when the impact of a misfortune is high and it is unexplainable. If beliefs in mystical harm develop from these tendencies, people should fault malicious practitioners for high-impact injuries, especially when other explanations do not exist.

People overwhelmingly accuse group mates of causing mystical harm to cause impactful hardship. Of the 83 practitioners or practices in the SOMH, at least 78% were said to cause illness, 77% death, 30% economic trouble, and 16% catastrophes (such as hailstorms or epidemics). In total, 94% were reported as producing at least one of those outcomes.

Ethnographic descriptions often focus on the inexplicability of these hardships (e.g., Nsenga: Reynolds 1963:19; Kerala Brahmins: Parpola 2000:221). The Navajo attributed illnesses to witchcraft when they were “mysterious from the Navaho point of view” or “persistent, stubbornly refusing to yield to usual Navaho treatment” (Kluckhohn 1944:54). Other strange circumstances, such as the appearance of unexplained tracks, were taken as further evidence. When the Tiwi experienced a decrease in mortality from fighting, raids, and neglected wounds, they attributed the resulting increase in natural deaths to a rise in poison sorcery (Pilling 1958:123).

People attribute random calamities aside from death, disaster, illness, and material loss to mystical malice. Ten of the 83 practitioners in the SOMH were said to produce sterility; 12 influenced love and attraction. Witches in colonial New England were rumored to cause death and illness, as well as clumsiness, falling, forgetting one’s way, unusual behavior in animals (such as a cow wandering off or a sow knocking its head against a fence), storms, fires, barrenness, deformed children, spoiled beer, and sleep paralysis (Karlsen 1987). Table 3 includes every example of harm or misfortune recorded in the SOMH that does not qualify as death, injury, love, sterility, catastrophe, or economic trouble. Nearly early all are inexplicable and bothersome.

Table 3. Every example of harm or misfortune caused by malicious supernatural harm recorded in the SOMH that does not relate to death, injury, sickness, love, sterility, catastrophe, or economic trouble. Citations appear in the SOMH dataset.

HARM OR MISFORTUNE	SOCIETY (with practitioner* and SOMH practitioner ID)
Accidents (including lorry accidents); bad behavior of wife; becoming a drunkard; burnt-down house; cracks in buildings; ill luck; poor performance on school exams; pregnant men	Akan, <i>obayifo</i> /witch [1]
Croaking or worsening of singer’s voice	Amhara, <i>buda</i> /evil eye [3]
Accidents; failure in fishing	Aymara, <i>laiqa</i> /sorcerer [8]

ON THE ORIGINS AND DESIGN OF WITCHES AND SORCERERS

Burnt-down hut; coldness of prince towards subject; failed magic; ruined performance of witch-doctor; sulkiness or unresponsiveness of wife	Azande, <i>aboro mangu</i> /witch [9]
Outcome of divination (poison oracle)	Azande, <i>aira kele ngwa</i> /sorcerer [10]
Broken items, including stools, pots, and bowls	Azande, <i>irakörinde</i> /possessor of teeth [11]
Bad luck	Azande, women’s sexual magic [12]
Losing strength while wrestling; slowing down in a foot- or reindeer-race	Chukchee, sorcery [22]
Disturbed growth; falling or tripping during competition (basketball)	Chuuk, <i>souboud</i> /sorcerer [23]
Temporary muteness	Dogon, <i>yadugonu</i> /witch [27]
Stuck or overturned truck	Highland Scot, <i>buidseachd</i> /witchcraft [40]
Malicious gossip; misbehavior of children	Hopi, <i>bowaka</i> /witch [42]
Confusion in sports competitions	Iroquois, witch [47]
Skin discoloration (i.e., becoming tan)	Lau Fijians, raw eyes [61]
Inability to perform acrobatics; inability to score during football	Lozi, <i>muloi</i> /witch [64]
Overturned canoes	Ojibwa, <i>windigo</i> /cannibal spirit [71]
Stopped rain	Pawnee, witch [74]
Deception	Santal, sorcery [77]
Boat accidents	Saramaka, sorcery [78]
Outcomes of competitions (e.g., races); twins	Tarahumara, <i>sukurúame</i> /sorcerer [89]
Appearance of baldspots; bad dreams; burnt clothes; “whatever goes wrong if there is no more convenient explanation”	Tiv, <i>mbatsav</i> /witch [91]
Disappearance	Tlingit, land otter sorcery [93]

*The indigenous term for the practitioner or practice with the ethnographer’s term or translation

6.2.3. *Animals associated with mystical harm explain impactful misfortune and invisible harm*

Those animals commonly associated with malevolent supernatural practitioners provide further evidence that these beliefs develop as compelling explanations of misfortune. Table 4 displays all of the animals associated with evil practitioners recorded in the SOMH, separated into those animals believed to be transformed practitioners and those animals that act as their servants, steeds, or helpers.

ON THE ORIGINS AND DESIGN OF WITCHES AND SORCERERS

Table 4. Every example of practitioners either transforming into animals (including the practitioner’s soul entering or becoming an animal) or working with them (including spirit familiars taking animal form) in the SOMH. Citations appear in the SOMH dataset.

ANIMALS INTO WHICH PRACTITIONERS TRANSFORM	
ANIMAL	SOCIETY (with practitioner* and SOMH practitioner ID)
Antelopes, bulls, bushpigs, centipedes, cows, crop worms, crocodiles, dogs, hyenas, leopards, lions, lizards, owls, rats, red deer, snakes (including poisonous ones), squirrels, tsetse fly	Akan, <i>obayifo</i> /witch [1]
Hyenas	Amhara, <i>buda</i> /evil eye [3]
Bats	Azande, <i>aboro mangu</i> /witch [9]
Wolves	Bahia Brazilians, <i>lobishomem</i> /werewolf [15]
Eagles, panthers	Dogon, lycanthrope [28]
Snakes	Eastern Toraja, <i>topokantoe</i> /sorcerer [29]
Buffalo, cats, deer, dogs, pigs, white ants	Eastern Toraja, <i>taoe mepongko</i> /werewolf [30]
Any beast or reptile, including crocodiles, snakes, and tigers	Garo, lycanthropy [36]
Animals, including coyotes, foxes, lizards, and wolves	Hopi, <i>bowaka</i> /witch [42]
Any animal, including dogs, pigs, turkeys, and owls	Iroquois, witch [47]
Dogs, hawks	Kapauku, <i>meenoo</i> /cannibal [53]
Hyenas, lions	Lozi, <i>muloi</i> /witch [64]
Horses, jaguars, venomous reptiles (including rattlesnakes)	Mataco, <i>ayieu</i> /sorcerer [68]
Bears	Santal, <i>tonhi</i> /witch [76]
Insects, reptiles, sparrows	Serbs, <i>vještice</i> /witch [79]
Chicken leopards (?), crocodiles, foxes, leopards, lions, monkeys, owls, witch cats (?), other birds (<i>akiki</i> , <i>kpire</i>)	Tiv, <i>mbatsav</i> /witch [91]
Cranes, geese, owls, porpoises, sea lions	Tlingit, <i>nukwsati</i> /witch [92]
Fireflies, flying foxes, nightbirds	Trobriand Islanders, <i>yoyova</i> /flying witches [94]
Ants, cats, donkeys, hyenas, monkeys, owls, snakes, vultures	Wolof, <i>doma</i> /witch [101]
ANIMALS ASSOCIATED WITH PRACTITIONERS (e.g., familiars, mounts)	

ON THE ORIGINS AND DESIGN OF WITCHES AND SORCERERS

ANIMAL	SOCIETY (with practitioner ^A , practitioner ID, and reference)
Antelopes, bats, chameleons, cocks, crabs, dogs, eagles, electric fish, goats, horses, house flies, leopards, lions, lizards, lice, owls, rats, smart hawks (?), snakes (including black mambas, black snakes, green mambas, puff adders, pythons, spitting cobras, thrush striped snakes), soldier ants, tsetse flies, wasps, weaver birds, wolves	Akan, <i>obayifo</i> /witch [1]
Hyenas	Amhara, <i>buda</i> /evil eye [3]
Nighthawks, owls	Aymara, <i>laiqa</i> /sorcerer [8]
Nocturnal birds and animals, including bats, jackals, and owls	Azande, <i>aboro mangu</i> /witch [9]
Dogs	Bahia Brazilians, <i>lobishomem</i> /werewolf [15]
Magical birds, owl-like birds	Bemba, <i>muloshi</i> /witch [17]
Spiders	Blackfoot, medicine [18]
Dogs, reindeer	Chukchee, sorcery [22]
Black cats, snakes	Eastern Toraja, <i>taoe mepongko</i> /werewolf [30]
Black cats	Eastern Toraja, <i>taoe meboetoe</i> /werewolf [31]
Animals that live in the forest, including elephants, crocodiles, snakes and other reptiles, and tigers	Garo, lycanthropy [36]
Lizards	Hopi, <i>bowaka</i> /witch [42]
Jackals, lizards, nightjars, owls, rats, water-snakes	Lozi, <i>muloi</i> /witch [64]
Snakes, wolverines	Ojibwa, witchcraft [72]
Owls	Pawnee, witch [74]
Dogs, tigers	Santal, <i>tonhi</i> /witch [76]
Birds, insects, small reptiles, snakes	Serbs, <i>vještice</i> /witch [79]
Invisible birds	Tarahumara, <i>sukurúame</i> /sorcerer [89]
Cats, nightjars, owls, snakes	Tiv, <i>mbatsav</i> /witch [91]
Snakes	Tzeltal, witch [100]

*The indigenous term for the practitioner or practice with the ethnographer's term or translation

A cursory glance reveals that many of the animals fall into one of two categories. First are those creatures responsible for impactful, random misfortunes. Snakes, bears, tigers, wolves, and crocodiles all fatally attack humans, leaving wounded individuals searching for explanations. Hypervigilant people should immediately suspect their enemies, and

ethnographic descriptions show that this frequently occurs. To the Akan, snakes bring “sudden and most unpleasant death,” so “anyone who has a narrow escape from a snake comes to ask who sent it and why” (Field 1970:130). Archer (1984:486) recorded an incident among the Santal of South Asia when a man was mauled by two bears. He soon consulted a witch finder to ascertain who attacked him and why.

Another class of ruinous misfortune is the destruction of crops. The Akan accused witches of becoming squirrels, rats, crop worms, antelopes, bush pigs, cows, bulls, dogs, and red deer – but all of those suspicions followed incidents when those animals consumed or destroyed a person’s harvest (Debrunner 1961).

The second major category encompasses those animals whose alliance or transformation explains how black magicians commit their wickedness unseen, such as owls, nightjars, tiny insects, fireflies. In all of these instances, people seem confident that a group mate harmed them and, noticing these animals flit about at night, find their appearance the missing explanatory piece for how a distrusted and mean other harmed them.

Several animals do not fall into the above categories, but ethnographic observations reveal that associations with evil practitioners are the most parsimonious explanation for otherwise puzzling events. The Tlingit believed that witches could become porpoises and sea lions (among many other animals), but these suspicions occurred when those creatures behaved enigmatically, lacking “the normal fear of human beings displayed by ordinary wild animals” (de Laguna 1972:731). Thus, an ailing sea lion that remained near people’s houses and porpoises that swam too close to shore were suspected of being metamorphosed witches.

Hyenas are associated with malicious magicians among the Wolof, Amhara, and Lozi – as well as many cultures not included in the SOMH, such as the Kaguru of Tanzania (Beidelman 1975) and Persians in medieval India (Ivanow 1926). This association seems a consequence of demonizing narratives feeding back on plausible explanations. If people believe that certain individuals have superpowers and feast on human flesh (as shown in Figure 1 and discussed in the next section), they should easily start to suspect transformation when they witness nocturnal hyenas digging up corpses.

7. Evil

The above two processes fail to explain the extreme heinousness of witches, such as their cannibalism, conspiracies in graveyards, and other vile, defiling acts. Here, I propose that these features develop from a *selection for demonizing narratives* – specifically, from a retention of those traits that justify the mistreatment of accused evil practitioners and even spur other group mates to remove them.

7.1. Selection for demonizing narratives

7.1.1. People promote demonizing narratives when they want to justify mistreatment of a group

The cannibalism, conspiratorial meetings, and existential threat posed by witches are very particular commonalities, but they are not unique. Sociologists studying moral panics and elimination campaigns in Western contexts frequently document analogous “folk devils”, with target groups ranging from youth sub-cultures (Cohen 1972) to Jews (Cohn 1967; Cohn 1966). Their analyses, together with insights from psychological research, reveal why these narratives recur with such consistency around the world.

Folk demonization usually occurs because one group – hereafter, the Campaigners – wants to justify the mistreatment of another – hereafter, the Targets (Goode and Ben-Yehuda 2009). Targets can be social groups, such as Jews or heretics, but they can also be those people who do some behavior or even a behavior itself, such as using LSD (Goode 2008).

Campaigners demonize Targets for several, non-exclusive reasons, including (a) competition, such as when removing Targets opens up resources, (b) existential fear, such as when Targets are believed to imminently destroy Campaigners, and (c) moral campaigns, such as when Campaigners want to curb some behavior. The foundations of these motivations can be legitimate, such as if removing victims frees up benefits that the Campaigners can enjoy (e.g., Philip IV’s motivation to arrest the Knights Templar: Barber 2006), or mistaken, such as when Campaigners erroneously perceive Targets to be threatening (e.g., panics about satanic groups: Victor 1989).

To remove or mistreat Targets, Campaigners often must gain the approval and sometimes the assistance of other group mates – hereafter, the Condoners. Thus, Campaigners gain from promoting sensational myths that justify and even invite assistance in the Targets’ elimination. In some instances, the fabrication and promotion of these myths is deliberate, as in many propaganda campaigns (e.g., Desforges 1999), but that need not be the case. People often unconsciously selectively attend to and exaggerate evidence that supports their goals and their claims (Nickerson 1998; Kunda 1990), a tendency arguably designed to more effectively sway others (Mercier and Sperber 2011; von Hippel and Trivers 2011).

As Campaigners concoct and refine portrayals of Targets that justify and urge violence, they selectively retain demonizing narratives. The iterative crafting of heinous myths about Jews illustrates this process. For example, Cohn (1967) tracked the history of *The Rabbi’s Speech*, a fabricated speech by a chief rabbi to a group of Jews, describing their plot to control finance and undermine Christianity. The speech started as a fictional chapter in an 1868 novel recounting a conspiratorial meeting between representatives of the twelve tribes of Israel and the Devil. In the years afterwards, the chapter was borrowed, modified, distributed in pamphlets, and reprinted as purported fact. In an 1881 version from France, the many speeches had been consolidated into a single address, the satanic element was absent, and a note explained that the document came from a forthcoming book by an English diplomat, presumably vouching for its authenticity.

7.1.2. Demonizing narratives develop and are maintained during stressful uncertainty

For demonizing narratives to flourish, Condoners need to believe them. But this is often not the case because people are armed with cognitive adaptations that recognize and protect

against deception (Sperber et al. 2010). In fact, ethnographies occasionally report people's skepticism of the portrayals of evil magicians (e.g., Tswana: Schapera 1952:44).

Condoners should be gullible or credulous in at least two conditions. First, they should believe influential or trusted parties, such as religious authorities or the media. More relevant, however, is the second set of circumstances: People should become more receptive to social information when they need information but individual knowledge is deficient. Times of unexplainable stress or catastrophe are especially potent. Research on social learning and gossip conclude that uncertainty, especially about important events, motivates individuals to pursue social information (Rosnow 1991), a finding supported theoretically (Boyd and Richerson 1988; Laland 2004), experimentally (Morgan et al. 2012), and across taxa (van Bergen, Coolen, and Laland 2004; Galef, Dudley, and Whiskin 2008). Feeling threatened makes a person receptive to alarming information in particular (Fessler et al. 2014).

In summary, times of unexplainable disaster breed paranoid suspicion while leaving injured parties intensely credulous. This combination of mistrust and gullibility allows fearful or exploitative campaigners to invent abominable witches.

7.2. Ethnographic evidence for demonization

7.2.1. *Witches are well-designed to induce punitive outrage*

In section 2, I showed that witches exhibit many common features, two of the most striking being (1) their threatening nature, and (2) their moral abhorrence, especially their cannibalism and defilement of human bodies. These may at first seem odd similarities, but growing psychological research suggests that these are the acts that invite the most severe moralistic ire, justifying the actor's destruction.

Painting a group as an existential threat – organized, secretive, but powerful and conspiratorial – is effective, because, in short, people want to remove threats. A vast literature shows that periods of existential threat promote participation in alleviative collective action (e.g., Johnson and Frickel 2011; Berry 2015; Maher 2010). Meanwhile, researchers note that people use past harms committed by a group to justify violence and mistreatment towards it (Sullivan et al. 2012) and people forgive aggressors when reminded of these wrongs (Wohl and Branscombe 2009). If narratives develop to maximally engender and support violence towards demonized Targets, Targets should be portrayed as representing as large a threat as is believable.

Aside from conspiratorially plotting widespread destruction, witches engage in atrocious behaviors, most frequently cannibalism and corpse desecration, but also acts such as necrophilia (e.g., Navajo: Kluckhohn 1944) and incest (e.g., Apache: Basso 1969; Kaguru: Beidelman 1963). What accounts for their pervasiveness? As readers can attest, these acts trigger an intense, visceral moral outrage (Haidt, Björklund, and Murphy 2000). For the !Kung, “the two worst sins, the unthinkable, unspeakable sins, are cannibalism and incest” (Marshall 1962:229), while among the Comanche, “the very idea that one of them might under stress eat another person was vigorously repulsed” (Wallace and Hoebel 1952:70). In fact, the repugnance at cannibalism is so intense that some societies even claim to forbid the

consumption of animals that resemble humans, exemplified in taboos on the Amazon river dolphin and nutria (a large semiaquatic rodent) among the Warao (Wilbert 1972:69).

Psychologists puzzle over the origins of our revulsion at these acts, but one possibility is that they indicate that an actor is dangerous and not to be trusted. People may have evolved psychological mechanisms to select social partners who are predictable and safe; individuals who even *consider* an atrocious behavior, including consuming human flesh, necrophilia, or mutilating corpses, reveal an underlying preference that makes them perilous social partners (Tetlock 2003; Hoffman, Yoeli, and Nowak 2015). Our repugnance at these acts may be enhanced by feelings of disgust, which have been shown to heighten moral judgment (Schnall et al. 2008).

Regardless of why we experience a revulsion at cannibalism and other obscenities, the broader point is that those acts seem to invite the greatest punitive outrage among social violations, making them potent for justifying and urging elimination. Should some other set of behaviors be shown to invite greater punitive outrage, the proposed theory predicts that those should be retained instead (assuming that people will believe those accusations).

7.2.2. Witches resemble the demonized targets of other moral panics and eradication campaigns

The traits of witches are sensational and atrocious, but they are not unique. Other panics and campaigns of mistreatment – such as attacks on heretics and dissidents, moral panics during times and stress, and conspiracy scares – similarly transform targets into witch-like demons. Table 5 shows selected examples. Note how frequently these groups presumably pose existential threats and violate sacred values.

Table 5. The targets of moral panics and elimination campaigns resemble witches, especially by posing existential threats and violating sacred values.

SELECTED GROUPS	TRAITS ASCRIBED (with references)
Christians, 100s, Roman Empire	Worship a donkey-god or genitals of priest; engage in secretive meetings, infanticide, child-cannibalism, and nighttime, incestuous orgies; “threaten the whole world and the universe and its stars with destruction by fire” (Felix and Rendall 1972:337-41)
Knights Templar, early 1300s, France	Deny Christ; spit, trample, and urinate on the cross; engage in homosexual practices, including disrobing newcomers and kissing them; collect in secret meetings at night; are bound by oaths enforced by death; swear to advance the Order at all costs, lawful or not (Barber 2006:202-203)
Fratricelli “de opinione” (radical Christian sect), 1466, Rome	Enjoy nighttime orgies in crypts; sacrifice a small boy, make powder from his body, and consume it communally in wine during mass (Cohn 1976:46)

ON THE ORIGINS AND DESIGN OF WITCHES AND SORCERERS

Catholics, mid-1800s, United States	“The anti-Catholics invented an immense lore about libertine priests, the confessional as an opportunity for seduction, licentious convents and monasteries... Infants born of convent liaisons were baptized and then killed” (Hofstadter 1964:80-81).
Mau Mau rebels, 1950s, Kenya	Mutilate victims’ corpses; take secretive oaths at night that involve obscenities like public masturbation and drinking menstrual blood (Lonsdale 1990:398-400)
Communists, 1965, Indonesia	Murder, torture, and castrate generals; woman’s Communist group dances naked at night; plot nation-wide purge of anti-Communists (Wieringa 2011; Henry 2014)
Tutsis, early 1990s, Rwanda	Differ fundamentally from the Hutu; send women to seduce Hutu and infiltrate positions of power; plot a war to reestablish control, massacre Hutu, and even establish Nilotic empire across Africa; admire Nazis and engage in cannibalism; elders kill and pillage and rape girls and women (Desforges 1999:72-83)

8. Discussion

8.1. The origins of sorcerers, lycanthropes, the evil eye and witches

How do the three selective processes interact to produce the diversity of evil practitioners identified in Figure 1? Figure 2 offers a prospective typology.

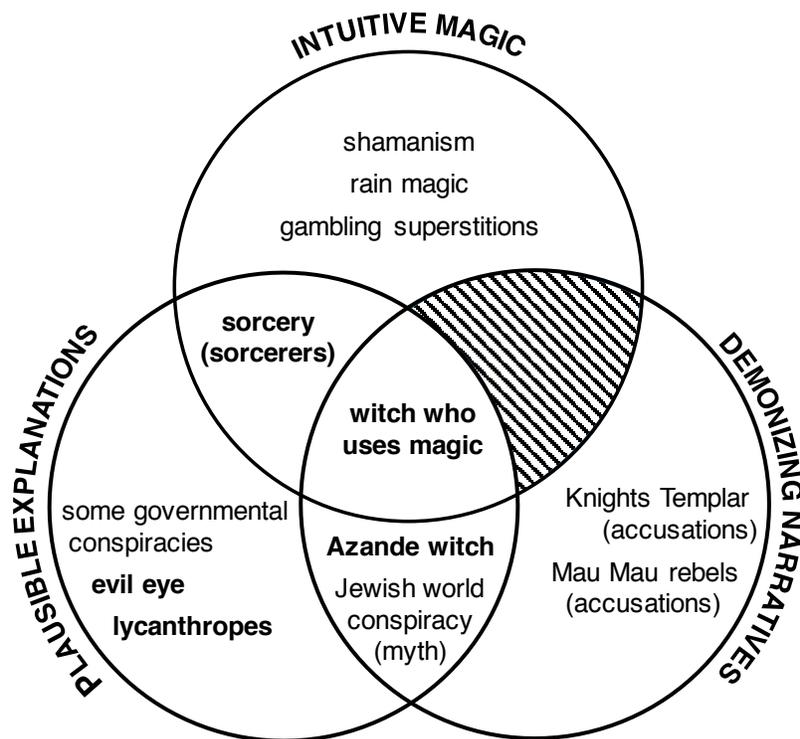


Figure 2. The three selective schemes responsible for beliefs in practitioners of supernatural harm (**bolded**) and examples of other beliefs they produce (**unbolded**). The intersection of demonizing narratives and intuitive magic is shaded because no beliefs should exist there – any demonizing narrative that also includes beliefs about a target group using magic should blame the target for using that magic to cause terrible events (pushing them into the center).

According to the theory outlined here, a selection for intuitive magic produces effective-seeming superstitions, including rain magic, gambling superstitions, and techniques aimed at harming others, or sorcery. Once people believe that this magic is effective and that other people practice it, it becomes a plausible explanation for misfortune. A person who feels threatened and who confronts unexplainable tragedy will often suspect distrusted, envious, spiteful group mates; malicious magic explains how they inflicted that harm. As people iteratively wonder how others harmed them, they retain increasingly plausible portrayals of sorcerers. For example, the sorcerer's techniques for harming people should come to match the illness, while people will come to believe that magicians undergo special training or transformation to procure their skills. As conceptions of these sorcerers change, people's actual attempts at harming others are expected to follow.

Werewolves, werebears, weresnakes, and other lycanthropes also seem to develop from a selective retention of plausible explanations. Baffled as to why an animal attacked them, a person suspects an envious rival of becoming or possessing an animal and stalking them at night. This explanation becomes more conceivable as the lycanthrope explains other strange events and as conceptions of the lycanthrope become more plausible. Many societies ascribe transformative powers to other evil practitioners (see Table 4), suggesting that people also suspect existing evil practitioners after attacks by wild animals.

The belief that people's stares and words transmit harm likewise seems to develop to plausibly explain misfortune. As reviewed earlier, people around the world connect jealousy and envy to a desire to induce harm. Thus, people who stare with envy or express a compliment are suspected of harboring malice and an intention to harm. A person who suffers a misfortune remembers these envious, malevolent stares and suspects those people of somehow injuring them. In iteratively inferring how those individuals attacked them, people construct the notion of the evil eye.

Why suspect the evil eye rather than sorcery? There are at least two possibilities. First, an accused individual may be ardent and apparently sincere in their avowal of not knowing sorcery – or of attacking the target in the first place (see these claims among the Azande, both described in text: Evans-Pritchard 1937:119-125; and shown in film: Singer 1981, minute 21). Alternatively, given beliefs that effective sorcery requires powers that develop with age, special knowledge, or certain experiences, it may seem unreasonable that a young or unexperienced envious group mate effectively ensorcelled the target. In these instances, the notion that their stare itself inadvertently harmed the target may provide a more plausible intervening mechanism.

The famous, odious, powerful witch, I propose, develops when these blamed, malicious practitioners become demonized. Demonizing narratives develop when people sincerely fear

an invisible threat, such as during times of inexplicable devastation, or when an influential group has an interest in eliminating or mistreating a target. Thus, witches mostly represent a confluence of the three cultural selective processes.

8.2. Ten predictions

The proposed theory generates many predictions for how shifting social, psychological, and material conditions should drive changes in beliefs about malicious practitioners. I referred to several of these throughout the paper; here are ten (the section of the paper is noted when a prediction is discussed in the paper):

1. People are more likely to believe in sorcerers as sorcery techniques become more effective-seeming.
2. People are more likely to ascribe injury to mystical harm when they are distrustful of others, persecuted, or otherwise convinced of harmful intent. (sect. 6.2.1)
3. The emotions attributed to evil practitioners will be those that most intensely and frequently motivate aggression. (sect. 6.2.1)
4. People are more likely to attribute injury to mystical harm when they lack alternative explanations. (sect. 6.2.2)
5. The greater the impact of the misfortune, the more likely people are to attribute it to mystical harm. (sect. 6.2.2)
6. Practitioners of mystical harm are more likely to become demonized during times of stressful uncertainty.
7. The traits ascribed to malicious practitioners will become more heinous or sensational as Condoners become more trustful or reliant on information from Campaigners.
8. Malicious practitioners will become less demonized when there is less disagreement or resistance about their removal.
9. The traits that constitute demonization will be those that elicit the most punitive outrage, controlling for believability. (sect. 7.2.1)
10. Malicious practitioners whose actions can more easily explain catastrophe, such as those who employ killing magic compared to love magic, will be easier to demonize.

9. Summary

How can so many societies maintain beliefs in witchcraft and sorcery when they breed paranoia, distrust, quarreling, and anxious bloodshed? Social scientists, convinced that such corrosive beliefs would normally be culled away, have proposed a catalogue of compensatory functions. I have argued otherwise. Beliefs in mystical harm are both byproducts of our cognition and tools of control, first providing answers to questions with false premises and then justifying the removal of menaces or competitors. Destructive beliefs endure when they intuitively cohere or when individuals are motivated to propagate them.

Acknowledgments

I thank Mia Charifson for research assistance and Steve Worthington at the Harvard Institute for Quantitative Social Science for statistical help. Nicolas Baumard, Ronald Hutton, Ted Slingerland, Max Winkler, and members of the Culture, Cognition, and Coevolution Lab at Harvard University shared comments on earlier drafts of this paper. Luke Glowacki provided detailed feedback on several versions of this manuscript; this paper and the ideas presented in it are much clearer as a result of his incisive suggestions. This research was funded by a graduate research fellowship from the National Science Foundation.

References

- Abalakina-paap, Marina, Walter G Stephan, Traci Craig, and W Larry Gregory. 1999. "Beliefs in Conspiracies." *Political Psychology* 20 (3): 637–47.
- Aginsky, B. W. 1939. "Population control in the Shanel (Pomo) tribe." *American Sociological Review* 4 (2): 209–16.
- Alm, Torbjørn. 2003. "The Witch Trials of Finnmark, Northern Norway, during the 17th Century: Evidence for Ergotism as a Contributing Factor." *Economic Botany* 57 (3): 403–16.
- Ames, David. 1959. "Belief in 'witches' among the rural Wolof of the Gambia." *Africa* 29 (3): 263–73.
- Ammār, Hāmid. 1954. *Growing up in an Egyptian village: Silwa, province Of Aswan*. London: Routledge and Kegan Paul Ltd.
- Apicella, Coren L., Paul Rozin, Justin T. A. Busch, Rachel E. Watson-Jones, and Cristine H. Legare. 2018. "Evidence from hunter-gatherer and subsistence agricultural populations for the universality of contagion sensitivity." *Evolution and Human Behavior*.
- Archer, William George. 1974. *The hill of flutes: Life, love, and poetry in tribal India: a portrait of the Santals*. Pittsburgh: University of Pittsburgh Press.
- . 1984. *Tribal law And justice: A report on the Santal*. New Delhi: Concept.
- Barber, Malcolm. 2006. *The trial of the Templars*. 2nd ed. Cambridge, UK: Cambridge University Press.
- Barkun, Michael. 2013. *A culture of conspiracy: Apocalyptic visions in contemporary America*. 2nd Editio. Berkeley and Los Angeles: University of California Press.
- Basso, Keith H. 1969. *Western Apache witchcraft*. Tuscon: The University of Arizona Press.
- Beattie, John. 1963. "Sorcery in Bunyoro." In *Witchcraft and sorcery in East Africa*, edited by John Middleton and E. H. Winter, 27–55. London: Routledge & Paul.
- Beidelman, T. O. 1963. "Witchcraft in Ukaguru." In *Witchcraft and sorcery in East Africa*, edited by John Middleton and E. H. Winter, 57–98. London: Routledge & Paul.
- . 1975. "Ambiguous animals: Two theriomorphic metaphors in Kaguru folklore." *Africa* 45 (2): 183–200.
- Berry, Marie. 2015. "From violence to mobilization: Women, war, and threat in Rwanda." *Mobilization: An International Quarterly* 20 (2): 135–56.
- Bohannan, Paul. 1958. "Extra-processual events in Tiv political institutions." *American Anthropologist* 60 (1): 1–12.
- Boyd, Robert, and Peter J. Richerson. 1988. "An evolutionary model of social learning: The effects of spatial and temporal variation." In *Social learning: Psychological and biological perspectives*, edited by Thomas R. Zentall and Bennett G. Galef. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bryant, A. T. 1929. *Olden times in Zululand and Natal*. London: Longmans, Green and Co.
- Budge, E. A. Wallis. 1901. *Egyptian magic*. London: Kegan, Paul, Trech and Trübner & Co.
- Caporaël, Linnda R. 1976. "Ergotism: The Satan loosed in Salem?" *Science* 192 (4234): 21–26.
- Chaudhuri, Soma. 2012. "Women as easy scapegoats: Witchcraft accusations and women as

- targets in tea plantations of India.” *Violence Against Women* 18 (10): 1213–34.
- Cohen, Stanley. 1972. *Folk devils and moral panics: The creation of the Mods and Rockers*. London: MacGibbon and Kee.
- Cohn, Norman. 1966. “The myth of the Jewish world-conspiracy: A case study in collective psychopathology.” *Commentary* 41 (6): 35–42.
- . 1967. *Warrant for genocide: The myth of the Jewish world-conspiracy and the Protocols of the Elders of Zion*. New York and Evanston: Harper & Row.
- . 1976. *Europe’s inner demons*. Frogmore: Paladin.
- Comaroff, Jean, and John L. Comaroff. 1999. “Occult economies and the violence of abstraction: Notes from the South African postcolony.” *American Ethnologist* 26 (2): 279–303.
- Cooper, Milton William. 1991. *Behold a pale horse*. Sedona, AZ: Light Technology Publishing.
- Crawford, Jane. 1963. “Evidences for witchcraft in Anglo-Saxon England.” *Medium Ævum* 32 (2): 99–116.
- Crick, Malcolm. 1973. “Two styles in the study of witchcraft.” *Journal of the Anthropological Society of Oxford* 4: 17–31.
- de Blécourt, Willem. 2000. “The making of the female witch: Reflections on witchcraft and gender in the early modern period.” *Gender & History* 12 (2): 287–309.
- De Laguna, Frederica. 1972. *Under Mount Saint Elias: The history and culture of the Yakutat Tlingit, vol. 2*. Washington, D.C.: Smithsonian Institution Press.
- Debrunner, Hans W. 1961. *Witchcraft in Ghana: A study on the belief in destructive witches and its effect on the Akan tribes*. Accra: Presbyterian Book Depot Ltd.
- Desforges, Alison. 1999. *Leave none to tell the story: Genocide in Rwanda*. New York: Human Rights Watch.
- Dundes, Alan, ed. 1992. *The evil eye: A casebook*. Madison: The University of Wisconsin Press.
- Emmons, George Thornton, and Frederica De Laguna. 1991. *The Tlingit Indians. Anthropological Papers of the American Museum of Natural History*. Vol. 70. Seattle: University of Washington Press and the American Museum of Natural History.
- Evans-Pritchard, E. E. 1937. *Witchcraft, oracles, and magic among the Azande*. Oxford, UK: Clarendon Press.
- Eves, Richard. 2013. “Sorcery and witchcraft in Papua New Guinea: Problems in definition.” *State, Society and Governance in Melanesia In Brief* 2012 (12).
- Faulkingham, Ralph Harold. 1971. “Political support in a Hausa village.” Michigan State University.
- Felix, Minucius, and Gerald H. Rendall. 1972. “Octavius.” In *Tertullian, Minucius Felix*, edited by T. R. Glover and Gerald H. Rendall, 303–437. Cambridge: Harvard University Press.
- Field, Margaret Joyce. 1970. *Search for security: An ethno-psychiatric study of rural Ghana*. New York: W. W. Norton & Company.
- Firth, Raymond. 1954. “The sociology of ‘magic’ in Tikopia.” *Sociologus* 4 (2): 97–116.
- Foster, Kevin R, and Hanna Kokko. 2009. “The evolution of superstitious and superstition-like behaviour.” *Proceedings. Biological Sciences / The Royal Society* 276 (1654): 31–37.
- Frazer, James George. 1920. *The golden bough: A study in magic and religion, vol. 1 (The magic art and the evolution of kings, vol. I)*. 2nd editio. London: Macmillan and Co.

- Frazier, Brandy N., Susan A. Gelman, and Henry M. Wellman. 2009. "Preschoolers' search for explanatory information within adult-child conversation." *Child Development* 80 (6): 1592–1611.
- Galef, Bennett G., Kristina E. Dudley, and Elaine E. Whiskin. 2008. "Social learning of food preferences in 'dissatisfied' and 'uncertain' Norway rats." *Animal Behaviour* 75 (2): 631–37.
- Gershman, Boris. 2016. "Witchcraft beliefs and the erosion of social capital: Evidence from Sub-Saharan Africa and beyond." *Journal of Development Economics* 120. Elsevier B.V.: 182–208.
- Goertzel, Ted. 1994. "Belief in conspiracy theories." *Political Psychology* 15 (4): 731–42.
- Goode, Erich. 2008. "Moral panics and disproportionality: The case of LSD use in the sixties." *Deviant Behavior* 29 (6): 533–43.
- Goode, Erich, and Nachman Ben-Yehuda. 2009. *Moral panics: The social construction of deviance*. 2nd ed. Wiley-Blackwell.
- Gufler, H. 1999. "Witchcraft beliefs among the Yamba (Cameroon)." *Anthropos* 94 (1–3): 181–98.
- Gusinde, Martin. 1971. *The Fireland Indians, vol. 1: The Selk'nam, on the life and thought of a hunting people of the Great Island of Tierra del Fuego*. New Haven: Human Relations Area Files.
- Haidt, Jonathan, Fredrik Björklund, and Scott Murphy. 2000. "Moral dumbfounding: When intuition finds no reason."
- Harman, Gilbert H. 1965. "The inference to the best explanation." *The Philosophical Review* 74 (1): 88–95.
- Henry, Adam Hughes. 2014. "Polluting the waters: A brief history of anti-Communist propaganda during the Indonesian massacres." *Genocide Studies International* 8 (2): 153–75.
- Hester, Marianne. 1992. *Lewd women and wicked witches: A study of the dynamics of male domination*. New York and London: Routledge.
- Hoffman, Moshe, Erez Yoeli, and Martin A. Nowak. 2015. "Cooperate without looking: Why we care what people think and not just what they do." *Proceedings of the National Academy of Sciences* 112 (6): 1727–32.
- Hofstadter, Richard. 1964. "The Paranoid Style in American Politics." *Harper's Magazine*.
- Hogbin, H. Ian. 1938. "Social reaction to crime: Law and morals in the Schouten Islands, New Guinea." *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 68: 223–62.
- Hutton, Ronald. 2002. "The global context of the Scottish witch-hunt." In *The Scottish witch-hunt in context*, edited by Julian Goodare, 16–32. Manchester: Manchester University Press.
- . 2004. "Anthropological and Historical Approaches To Witchcraft: Potential for a New Collaboration?" *The Historical Journal* 47 (2): 413–34.
- . 2017. *The witch: A history of fear, from ancient times to the present*. New Haven and London: Yale University Press.
- Ivanow, W. 1926. "Muhammadan child-killing demons." *Man* 26: 195–99.

- Johnson, Dominic D. P., Daniel T Blumstein, James H Fowler, and Martie G Haselton. 2013. "The evolution of error: error management, cognitive constraints, and adaptive decision-making biases." *Trends in Ecology & Evolution* 28 (8). Elsevier Ltd: 474–81.
- Johnson, Erik W., and Scott Frickel. 2011. "Ecological threat and the founding of U.S. national environmental movement organizations, 1962-1998." *Social Problems* 58 (3): 305–29.
- Jones, William. 1939. *Ethnography of the Fox Indians*. Washington: Government Printing Office.
- Kapferer, Bruce. 2002. "Introduction: Outside all reason – magic, sorcery and epistemology in anthropology." In *Beyond rationalism: Rethinking magic, witchcraft and sorcery*, 1–30. New York: Berghahn Books.
- Karlsen, Carol F. 1987. *The devil in the shape of a woman: Witchcraft in colonial New England*. New York: W. W. Norton & Company.
- Karsten, Rafael. 1955. *The religion of the Samke: Ancient beliefs and cults of the Scandinavian and Finnish Lapps*. Leiden: E.J. Brill.
- Keinan, G. 2002. "The Effects of Stress and Desire for Control on Superstitious Behavior." *Personality and Social Psychology Bulletin* 28 (1): 102–8.
- Kluckhohn, Clyde. 1944. *Navaho witchcraft*.
- . 1959. "Recurrent Themes in Myths and Mythmaking." *Daedalus* 88 (2): 268–79.
- Knauff, Bruce. 2010. *The Gebusi: Lives transformed in a rainforest world*. 2nd Editio. New York: McGraw Hill.
- Kunda, Ziva. 1990. "The case for motivated reasoning." *Psychological Bulletin* 108 (3): 480–98.
- Lagae, C. R. 1999. *The Azande or Niam-Niam: Zande organizations, religious and magical beliefs, family customs*. New Haven: HRAF.
- Laland, Kevin N. 2004. "Social learning strategies." *Learning & Behaviour* 32 (1): 4–14.
- Legare, Cristine H., and André L. Souza. 2012. "Evaluating ritual efficacy: Evidence from the supernatural." *Cognition* 124 (1): 1–15.
- Lombrozo, Tania. 2006. "The structure and function of explanations." *Trends in Cognitive Sciences* 10 (10): 464–70.
- Lonsdale, John. 1990. "Mau Maus of the mind: Making Mau Mau and remaking Kenya." *The Journal of African History* 31 (3): 393–421.
- Mace, Ruth, Matthew G. Thomas, Jiajia Wu, QiaoQiao He, Ting Ji, and Yi Tao. 2018. "Population structured by witchcraft beliefs." *Nature Human Behaviour* 2 (1). Springer US: 39–44.
- Maher, Thomas V. 2010. "Threat, resistance, and collective action: The cases of Sobibór, Treblinka, and Auschwitz." *American Sociological Review* 75 (2): 252–72.
- Mair, Lucy. 1969. *Witchcraft*.
- Malinowski, Bronisław. 1922. *Argonauts of the western Pacific: An account of native enterprise and adventure in the archipelagoes of Melanesian New Guinea*. London: George Routledge & Sons, Ltd.
- . 1948. "Magic, science, and religion." In *Magic, science and religion, and other essays*, 17–92. Garden City, NY: Doubleday Anchor Books.
- Marshall, Lorna. 1962. "Kung Bushman religious beliefs." *Africa* 32 (3): 221–52.
- Mashuri, Ali, and Esti Zaduqisti. 2015. "The effect of intergroup threat and social identity

- salience on the belief in conspiracy theories over terrorism in indonesia: Collective angst as a mediator.” *International Journal of Psychological Research* 8 (1): 24–35.
- Massé, Henri, and Charles A. Messner. 1954. *Persian beliefs and customs*. New Haven: Human Relations Area Files.
- McCauley, Clark, and Susan Jacques. 1979. “The popularity of conspiracy theories of presidential assassination: a bayesian analysis.” *Journal of Personality and Social Psychology* 37 (5): 637–44.
- McKay, Ryan, and Charles Efferson. 2010. “The subtleties of error management.” *Evolution and Human Behavior* 31 (5). Elsevier Inc.: 309–19.
- Mercier, Hugo, and Dan Sperber. 2011. “Why do humans reason? Arguments for an argumentative theory.” *Behavioral and Brain Sciences* 34 (2): 57-74; discussion 74-111.
- Mesaki, Simeon. 1994. “Witch-killing in Sukumaland.” In *Witchcraft in contemporary Tanzania*, edited by Ray Abraham, 47–60. Cambridge, UK: African Studies Centre, University of Cambridge.
- Miceli, Maria, and Cristiano Castelfranchi. 2007. “The envious mind.” *Cognition and Emotion* 21 (3): 449–79.
- Mirowsky, John, and Catherine E Ross. 1983. “Paranoia and the structure of powerlessness.” *American Sociological Review* 48 (2): 228–39.
- Morgan, Thomas J. H., Luke E. Rendell, Micael Ehn, William Hoppitt, and Kevin N. Laland. 2012. “The evolutionary basis of human social learning.” *Proceedings of the Royal Society. Series B, Biological Sciences* 279 (1729): 653–62.
- Munro, Neil Gordon. 1963. *Ainu creed and cult*. New York: Columbia University Press.
- Murray, Margaret Alice. 1921. *The witch cult in western Europe*. Oxford: Clarendon Press.
- Nadel, Siegfried Frederick. 1954. *Nupe religion*. London: Routledge & Paul.
- Natrella, Kayla Theresa. 2014. “Witchcraft and women: A historiography of witchcraft as gender history.” *Binghamton Journal of History* 15.
- Needham, Rodney. 1978. *Primordial characters*. Charlottesville: University Press of Virginia.
- Nemeroff, Carol, and Paul Rozin. 2000. “The makings of the magical mind: The nature and function of sympathetical magical thinking.” In *Imagining the impossible: Magical, scientific, and religious thinking in children*, 1–34.
- Nickerson, RS. 1998. “Confirmation bias: A ubiquitous phenomenon in many guises.” *Review of General Psychology* 2 (2): 175–220.
- Norenzayan, Ara. 2013. *Big gods: How religion transformed cooperation and conflict*. Princeton University Press.
- Oliphant, Samuel Grant. 1913. “The story of the strix: Ancient.” *Transactions and Proceedings of the American Philological Association* 44: 133–49.
- . 1914. “The story of the strix: Isidorus and the glossographers.” *Transactions and Proceedings of the American Philological Association* 44: 49–63.
- Oliver, Douglas L. 1955. *A Solomon Island society: Kinship And leadership among the Siuai Of Bougainville*. Harvard University Press.
- Ono, Koichi. 1987. “Superstitious behavior in humans.” *Journal of the Experimental Analysis of Behavior* 47 (3): 261–71.
- Oster, Emily. 2004. “Witchcraft, weather and economic growth in Renaissance Europe.”

- Journal of Economic Perspectives* 18 (1): 215–28.
- Parpola, Marjatta. 2000. *Kerala Brahmins in transition: A study of a Namputiri family*. Helsinki: Finnish Oriental Society.
- Pilling, Arnold Remington. 1958. “Law and feud in an aboriginal society of north Australia.” University of California, Berkeley.
- Pospisil, Leopold J. 1958. *Kapauku Papuans and their law*. New Haven: Yale University: Department of Anthropology.
- Raihani, Nichola J, and Vaughan Bell. 2017. “Paranoia and the social representation of others: A large-scale game theory approach.” *Scientific Reports* 7. Springer US: 4544.
- Reichel-Dolmatoff, Gerardo. 1971. *Amazonian cosmos: The sexual and religious symbolism of the Tukano Indians*. Chicago: University of Chicago Press.
- . 1976. “Training for the priesthood among the Kogi of Colombia.” In *Enculturation in Latin America: An anthology*, 265–88. Los Angeles: UCLA Latin American Center Publications.
- . 1997. *The Kogi: A tribe of the Sierra Nevada de Santa Marta, Colombia, vol. 1*. New Haven: HRAF.
- Reynolds, Barrie. 1963. *Magic, divination and witchcraft among the Barotse of northern Rhodesia*. London: Chatto and Windus.
- Richards, Audrey I. 1935. “A modern movement of witch-finders.” *Africa* 8 (4): 448–61.
- Rosnow, Ralph L. 1991. “Inside rumor: A personal journey.” *American Psychologist* 46 (5): 484–96.
- Rothschild, Zachary K, Mark J Landau, Daniel Sullivan, and Lucas A Keefer. 2012. “A Dual-Motive Model of Scapegoating: Displacing Blame to Reduce Guilt or Increase Control” 102 (6): 1148–63.
- Rozin, Paul, Linda Millman, and Carol Nemeroff. 1986. “Operation of the laws of sympathetic magic in disgust and other domains.” *Journal of Personality and Social Psychology* 50 (4): 703–12.
- Rozin, Paul, and Carol Nemeroff. 2002. “Sympathetic magical thinking: The contagion and similarity ‘heuristics.’” In *Heuristics and biases: The psychology of intuitive judgment*, edited by Thomas Gilovich, Dale Griffin, and Daniel Kahneman, 201–16. Cambridge, UK: Cambridge University Press.
- Saalfeld, Vanessa, Zeina Ramadan, Vaughan Bell, and Nichola J. Raihani. 2018. “Differences in social rank and political affiliation encourage paranoid attributions.”
- Sanders, Andrew. 1995. *A deed without a name: The witch in society and history*. Oxford and Washington DC: Berg Publishers.
- Schapera, Isaac. 1952. “Sorcery and witchcraft in Bechaunaland.” *African Affairs* 51 (202): 41–52.
- Schefold, Reimar. 1988. *Lia: Das grosse Ritual auf den Mentawai-Inseln (Indonesien)*. Berlin: Dietrich Reimer Verlag.
- Schnall, Simone, Jonathan Haidt, Gerald L. Clore, and Alexander H. Jordan. 2008. “Disgust as embodied moral judgment.” *Personality and Social Psychology Bulletin* 34 (8): 1096–1109.
- Singer, Andre. 1981. *Witchcraft among the Azande*. England: Royal Anthropological Institute.

- Skaria, Ajay. 1997. "Women, witchcraft and gratuitous violence in colonial western India." *Past & Present* 155: 109–41.
- Skinner, B Y B F. 1948. "'Superstition' in the pigeon." *Journal of Experimental Psychology* 38 (2): 168–72.
- Smith, Richard H., and Sung Hee Kim. 2007. "Comprehending envy." *Psychological Bulletin* 133 (1): 46–64.
- Smith, Richard H., Terence J. Turner, Ron Garonzik, Colin W. Leach, Vanessa Urch-Druskat, and Christine M. Weston. 1996. "Envy and schadenfreude." *Personality and Social Psychology Bulletin* 22 (2): 158–68.
- Sperber, Dan, Fabrice Clément, Christophe Heintz, Olivier Mascaro, Hugo Mercier, Gloria Origgi, and Deirdre Wilson. 2010. "Epistemic vigilance." *Mind and Language* 25 (4): 359–93.
- Stern, Theodore. 1965. *The Klamath Tribe: A people and their reservation*. Seattle: University of Washington Press.
- Sullivan, Daniel, Mark J Landau, Nyla R Branscombe, and Zachary K Rothschild. 2012. "Competitive victimhood as a response to accusations of ingroup harm doing." *Journal of Personality and Social Psychology* 102 (4): 778–95.
- Talayesva, Don C., and Leo William Simmons. 1942. *Sun Chief: The autobiography of a Hopi Indian*. New Haven: Yale University Press.
- Tennen, Howard, and Glenn Affleck. 1990. "Blaming others for threatening events." *Psychological Bulletin* 108 (2): 209–32.
- Tetlock, Philip E. 2003. "Thinking the unthinkable: sacred values and taboo cognitions." *Trends in Cognitive Sciences* 7 (7): 320–24.
- Turner, Victor W. 1964. "Witchcraft and sorcery: Taxonomy versus dynamics." *Africa* 34 (4): 314–25.
- van Bergen, Yfke, Isabelle Coolen, and Kevin N Laland. 2004. "Nine-spined sticklebacks exploit the most reliable source when public and private information conflict." *Proceedings. Biological Sciences / The Royal Society* 271 (1542): 957–62.
- van de Ven, Niels. 2016. "Envy and its consequences: Why it is useful to distinguish between benign and malicious envy." *Social and Personality Psychology Compass* 10 (6): 337–49.
- van de Ven, Niels, Charles E. Hoogland, Richard H. Smith, Wilco W. van Dijk, Seger M. Breugelmans, and Marcel Zeelenberg. 2015. "When envy leads to schadenfreude." *Cognition and Emotion* 29 (6). Taylor & Francis: 1007–25.
- van Prooijen, Jan-Willem, and Karen M. Douglas. 2017. "Conspiracy theories as part of history: The role of societal crisis situations." *Memory Studies* 10 (3): 323–33.
- van Prooijen, Jan-Willem, and Nils B. Jostmann. 2013. "Belief in conspiracy theories: The influence of uncertainty and perceived morality." *European Journal of Social Psychology* 43 (1): 109–15.
- van Prooijen, Jan-Willem, and Eric van Dijk. 2014. "When consequence size predicts belief in conspiracy theories: The moderating role of perspective taking." *Journal of Experimental Social Psychology* 55. Elsevier Inc.: 63–73.
- Victor, Jeffrey S. 1989. "A rumor-panic about a dangerous satanic cult in western New York." *New York Folklore* 15 (1–2): 23–49.

ON THE ORIGINS AND DESIGN OF WITCHES AND SORCERERS

- von Hippel, William, and Robert Trivers. 2011. "The evolution and psychology of self-deception." *Behavioral and Brain Sciences* 34 (1): 1-16; discussion 16-56.
- Vyse, Stuart. 2014. *Believing in magic: The psychology of superstition*. Oxford and New York: Oxford University Press.
- Walker, Jr., Deward E. 1967. "Nez Perce sorcery." *Ethnology* 6 (1): 66-96.
- Wallace, Ernest, and E. Adamson Hoebel. 1952. *The Comanches: Lords of the south Plains*. Norman: University of Oklahoma Press.
- Wallace, William J., and Edith S. Taylor. 1950. "Hupa sorcery." *Southwestern Journal of Anthropology* 6 (2): 188-96.
- Walraven, B.C.A. 1980. "The social significance of sorcery and sorcery accusations in Korea." *Asiatische Studien: Zeitschrift Der Schweizerischen Asiengesellschaft* 34 (2): 69-90.
- Warner, W. Lloyd. 1958. *A black civilization: A social study of an Australian tribe*. Harper & Brothers.
- Weltfish, Gene. 1965. *The lost universe: With a closing chapter on "The universe regained."* New York and London: Basic Books.
- Whiting, Beatrice Blyth. 1950. *Paiute sorcery*. New York: The Viking Fund Inc.
- Wieringa, Saskia Eleonora. 2011. "Sexual slander and the 1965/66 mass killings in Indonesia: Political and methodological considerations." *Journal of Contemporary Asia* 41 (4): 544-65.
- Wilbert, Johannes. 1972. *Survivors of Eldorado: Four Indian cultures of South America*. New York: Praeger Publishers.
- Wilson, Monica Hunter. 1951. "Witch beliefs and social structure." *American Journal of Sociology* 56 (4): 307-13.
- Wohl, Michael, and Nyla R. Branscombe. 2009. "Group threat, collective angst, and ingroup forgiveness for the war in Iraq." *Political Psychology* 30 (2): 193-217.

Magic, explanations and evil: On the origins and design of witches and sorcerers

SUPPLEMENTARY MATERIALS

Manvir Singh

Department of Human Evolutionary Biology, Harvard University, Cambridge, MA 02138

20 July 2018

1. The Survey of Mystical Harm (SOMH)

1.1. Background

The Survey of Mystical Harm (SOMH) is a newly-created dataset, designed to characterize patterns in beliefs about practitioners of mystical harm across societies. The Survey samples ethnographic texts from the 60 societies comprising the Probability Sample File of the electronic Human Relations Area Files, a pseudo-random sample of well-documented human societies designed to make inferences about humanity more generally (Human Relations Area Files 1967; Naroll 1967). For each society, I selected the two ethnographic texts containing the most paragraphs tagged for the code SORCERY (USE code 754)¹. Whenever the documents included a total of less than twenty paragraphs, I included all ethnographic texts with paragraphs tagged for SORCERY until at least twenty paragraphs were covered or, if that was not possible, until all of the ethnographic texts tagged for SORCERY in a given culture were included.

Two independent coders read through the tagged paragraphs for each society, identified the different practitioners of mystical harm discussed, and coded each practitioner for 58 features. Discrepancies between the two resulting datasets were identified and resolved through discussion to produce a final, merged dataset, available at osf.io/492mj [data will be

¹ According to the electronic Human Area Files, code 754 (SORCERY) includes any reference to the following: “Ideas of the causation of disease and death through witchcraft and sorcery; actual and reputed prevalence of sorcery; motives for practicing sorcery; methods (e.g., bone pointing, manipulation of effigies, exuvial magic, invocation of spirit aids); employment of sorcerers; witches, wizards, and sorcerers; physical, social and mental characteristics; sources of power; training; organization; special types of sorcerers (e.g., werewolves and other were-animals, vampires, individuals with the evil eye); evidence as to the efficacy of sorcery; reactions to sorcerers (e.g., witch hunts); etc.”

made available at time of publication]. Supplementary Table 1 displays the societies, ethnographic documents, and practitioner IDs.

1.2. Inclusion criteria

Each row of the dataset corresponds with a conception of a practitioner (or practice) of mystical harm. The inclusion criteria for a practitioner of mystical harm were as follows:

People who are believed to use magical or supernatural powers to attack non-strangers: Individuals, either in-group or people with whom individuals otherwise frequently interact, believed to harm people they know through magic (e.g., recited spells, magical poisons, charms) or supernatural powers (e.g., becoming a spirit and eating people; transforming into animals and attacking people; harming people with thoughts or stares). **This excludes beliefs about supernatural attackers who are strangers** (e.g., beliefs that individuals from far-away lands transform into bears and hassle travelers). **This also excludes people who only attack out-group members** (e.g., shamans who *only* attack members of other groups).

Each row of the dataset refers to a different practitioner of mystical harm. Some societies will have several of such practitioners – for example, an ethnographer might describe one kind of person who can become an animal at night and a different kind of person who transmits harm through stares. In this case, each practitioner will have their own row. In another instance, an ethnographer may only describe one practitioner in a society – for example, they may say that people believe that there exist some people who can become animals, fly, and attack with magical spells. In this instance, code only one practitioner for that society.

In some instances, ethnographers might only describe a technique or practice – for example, “black magic” – but they won’t present it as something that certain practitioners do. In that case, the row should refer only to the practice (if appropriate, clarify in the variables CLASS01 or CLASS02).

Instances where public magicians (e.g., shamans, priests, other magicians) are said to have malignant, mystical powers:

- If the ethnographer points out that, for example, “shamans are sometimes accused of being this practitioner class” – but shamans do not differ in any other way – then do not code them as a separate line.
- If public magicians differ for some variable from other people or the rest of a practitioner class, code them as a separate practitioner class. For example, shamans should be coded as a separate practitioner class in these instances: “all witches harm people, but shaman-witches can fly and become animals,” and “all people can harm others with black magic, but shamans are feared for harming people by shooting beads into their legs.”

Two additional exclusion criteria were added while resolving discrepancies:

Exclude spells and curses that are used to enforce contracts or promises.

Exclude mystical harm that is considered to be “good magic”, such as judiciary magic.

1.3. Citations

Any coding decision that reports the presence of some trait includes a citation in the format *refX:Y*, where X refers to the number of the document (for example, reference 1, reference 2, and so on; the title and author of the document appear in the same row) and Y reports the page number.

2. Analyses

2.1. PCA 1 (including lycanthropes and cannibals/ghouls)

All statistical analyses were conducted in R (R Core Team 2015). Because the data are binary, I conducted a logistic PCA, using the `logisticPCA` function of the `logisticPCA` package (Landgraf and Lee 2015). I specified $k = 2$ and, following Landgraf (2016), used the `cv.lpca` function to choose m , an argument in the `logisticPCA` function denoting the natural parameters from the saturated model. For the reported analyses, I excluded practitioner classes that are exclusively leaders (e.g., sheikhs, elders) and public magicians (e.g., shamans, priests) (i.e., coded 1 for the variable `BEHA18`). I removed all free-response variables and transformed the following categorical variables into binary variables:

`TECH10`: 1 & 2 --> 1
[*“always unintentional” and “sometimes unintentional” coded as “unintentional”*]

`PROC01`: 1 & 2 --> 1
[*“biological heredity” and “non-biological heredity” coded as “heredity”*]

`BEHA01`: 1 & 2 --> 1
[*“devour flesh” and “devour souls” coded as “cannibalism”*]

`BEHA14`: 1, 2, & 3 --> 1; 4 --> 0
[*“harm family members for enjoyment”, “harm family members as obligation”, and “harm family members as consequence of harm” coded as “harm family members”; “harm family members for other reasons” coded as absence*]

`BEHA20`: 1 & 2 --> 1
[*“political leaders” and “household heads, elder lineages, generation leaders” coded as “leaders”*]

I also created two new variables from the categorical variable `SEX` coding whether the given practitioner class is mostly or exclusively female (`SEX1`) or mostly or exclusively male (`SEX2`). I binned each practice or practitioner class into a superordinate category (e.g., “evil eye”, “witch”) based on the ethnographer’s translation (`NAME02`) and term (`NAME03`). The binning decisions are recorded under the variable `NAME04` in the dataset.

Figure 1 in the main text shows the 83 practitioners plotted on the two PC dimensions. The loadings appear in Supplementary Table 2.

2.2. PCA 2 (excluding lycanthropes and cannibals/ghouls)

The analyses for the second logistic PCA were identical to those for the first PCA, with a single exception. I removed any practitioner binned as a “lycanthrope” or “cannibal/ghoul” under NAME04. Supplementary Figure 1 shows the practitioners of mystical harm plotted along the two PC-dimensions for this analysis; the loadings appear in Supplementary Table 3.

Supplementary Tables

Supplementary Table 1. The sixty societies coded for the Survey of Mystical Harm (SOMH). The IDs denote the practices or practitioners coded and refer to the points in Figure 1 in the main article. Asterisks refer to leaders or public magicians believed to inflict mystical harm.

SOCIETY (with references)	PRACTITIONER IDs
Akan (Debrunner 1961; Field 1970)	1, 2
Amhara (Messing 1985; Reminick 1974)	3
Andaman Islanders (Cipriani 1961; Man 1932)	4*
Aranda (Basedow 1925; Spencer and Gillen 1927)	5*, 6, 7
Aymara (Tschopik 1946, 1951)	8
Azande (Evans-Pritchard 1937; Lagae 1999)	9, 10, 11, 12, 13
Bahia Brazilians (Beierle 1999; Hutchinson 1957; Pierson 1967)	14, 15, 16
Bemba (Maxwell 1983; Richards 1935)	17
Blackfoot (Goldfrank 1966; Schultz 1930)	18
Bororo (Baldus and Lillios 1974; Colbacchini and Albisetti 1996)	19*, 20
Central Thai (Hanks 1963; Textor 1973)	21*
Chukchee (Bogoras 1907)	22
Chuuk (Bollig 1967; Mahony 1971)	23, 24*
Copper Inuit (Damas 1996; Jenness 1922; Pryde 1972; Stefánsson 1913)	25*
Dogon (Griaule and Winchell 1986; van Beek 1994)	26, 27, 28
Eastern Toraja (Adriani and Kruijt 1968, 1969)	29, 30, 31
Ganda (Mair 1934; Orley 1970)	32, 33
Garo (Burling 1963; Goswami and Majudmar 1968; Majudmar 1978; Marak 1997; Playfair 1909; Rongmuthu 1960)	34*, 35, 36
Guaraní (Ganson 1994; Schaden and Lewinsóhn 1969)	37
Hausa (Besmer 1983; Cohen 1969; Faulkingham 1971; Greenberg 1946)	38, 39
Highland Scots (Ducey 1956; Geddes 1955; Parman 1990)	40, 41
Hopi (Aberle 1951; Talayesva and Simmons 1942)	42
Iban (Graham 1987; Pilz 1988; Sandin 1967, 1980; Sutlive 1992)	43
Ifugao (Barton 1919; Lambrecht 1955, 1957)	44, 45, 46
Iroquois (Parker 1913; Selden 1966; Wallace 1972)	47, 48*
Kanuri (Cohen 1967; Peshkin 1972)	49, 50, 51*
Kapauku (Pospisil 1958, 1978)	52, 53
Khasi (Godwin-Austen 1872; McCormack 1964; Stegmiller and Knight 1956)	54, 55*

Klamath (Gatschet 1890; Stern 1965)	56*
Kogi	No practitioners coded
Korea	No practitioners coded
Kuna (Howe 1986; Marshall 1950; McKim 1947; Nordenskiöld 1930, 1966; Nordenskiöld and Kantule 1938; Wafer 1934)	57*, 58*, 59
Kurds (Masters 1953)	60
Lau Fijians (Hocart 1929; St. Johnston 1918)	61, 62
Libyan Bedouins (Abu-Lughod 1986)	63
Lozi (Gluckman 1955; Reynolds 1963)	64
Maasai (Merker 1971; Spencer 1988)	65, 66*, 67
Mataco (Alvarsson 1988; Karsten 1932; Métraux 1943, 1959)	68
Mbuti (Turnbull 1965a, 1965b)	69, 70
Ojibwa (Landes 1937; Rogers 1962)	71, 72
Ona (Chapman 1982; Gusinde 1971)	73*
Pawnee (Murie 1914; Weltfish 1965)	74
Saami (Itkonen 1984; Scheffer 1704)	75*
Santal (Archer 1974, 1984)	76, 77
Saramaka (Herskovits 1934; Price 1990)	78
Serbs (Kemp 1935; Pavlovic 1973)	79, 80, 81
Shluh (Berque 1973; Hatt 1974; Hoffman 1967; Montagne 1973)	82
Sinhalese (Leach 1961; MacDougall 1971)	83, 84
Somali (Cerulli 1959; Helander 1988; Lewis 1961, 1963)	85*, 86, 87
Taiwan Hokkien (Ahern 1973, 1978; Diamond 1969; Gallin 1966; Harrell 1974; Saso 1974; Seaman 1981; Wolf and Huang 1980)	88
Tarahumara (Bennett 1935; Kennedy 1978; Merrill 1988)	89
Tikopia (Firth 1939, 1954, 1970)	90
Tiv (Akiga and East 1939; Bohannon and Bohannon 1969)	91
Tlingit (De Laguna 1972; Emmons and De Laguna 1991)	92, 93
Trobriand Islanders (Malinowski 1922; Tambiah 1983)	94, 95*
Tukano (Goldman 1963; Reichel-Dolmatoff 1971)	96*, 97, 98
Tzeltal (Hunt 1962; Nash 1970)	99, 100
Wolof (Ames 1959; Irvine 1973)	101
Yakut (Sieroszewski 1993)	102*
Yanoama (Barker 1967; Chagnon 1968; Early and Peters 1990; Wilbert 1995)	103

Supplementary Table 2. Factor matrix for the first PCA (including lycanthropes and cannibals/ghouls). The coloring corresponds with the value of the loading, ranging from blue (highly positive) to white (zero) to red (highly negative).

LOADINGS (PC1)	LOADINGS (PC2)	VARIABLE	DESCRIPTION
0.2208752	0.133847763	ABILo1	Fly
0.068213015	0.011154332	ABILo2	Invisibility
0.13240958	0.080666357	ABILo3	Soul travel
0.245042239	0.137639921	ABILo4	Animal transformation
0.184611326	0.232455544	BEHAo1	Cannibalism
0.22856396	-0.071837988	BEHAo2	Corpse desecration
0.025118844	0.029410285	BEHAo3	Opposite actions
0.032039463	-0.026125244	BEHAo5	Incest
0.035055404	-0.00308761	BEHAo6	Necrophilia
0.046308811	0.030848288	BEHAo7	Nymphomania
0.00914106	-0.010981892	BEHAo8	Sexual obscenities for transformation
0.100295414	0.11043975	BEHAo9	Nudity
0.035814841	0.038495465	BEHA10	Bad hygiene
0.02178428	0.012786385	BEHA11	Association with excretion
0.211320915	0.076962524	BEHA12	Conspiracy, league, organization
0.19244167	0.118745253	BEHA13	Meet in secret
0.146211338	0.036224591	BEHA14	Harm family members
0.319285251	0.085971607	BEHA15	Nighttime activity
0.276063175	0.049308566	BEHA16	Animal familiars
0.188234353	-0.382499798	BEHA19	Magicians
0.083659147	-0.110353787	BEHA20	Political leaders
-0.022632682	-0.126306225	CLASSo1	All people capable
-0.098595492	-0.022549713	CLASSo2	Unspecified who does harm
0.105872049	0.216248126	PHYSo1	Physiological differences
0.082447912	0.154550907	PHYSo3	Phys. differences enable powers
0.07149179	0.037100343	PHYSo4	Possession
0.080952666	0.058730405	PHYSo5	Other differences
0.173995988	0.165643999	PROCo1	Hereditary
0.036799327	0.286362991	PROCo2	Inborn powers
0.267148198	-0.18623896	PROCo3	Learn powers

0.114922622	0.142536084	PROC04	Consume substance to gain powers
0.097472255	-0.023023881	PROC05	Kill someone to gain powers
0.109576537	-0.145890467	PROC06	Work with spirit
0.028274322	-0.043217027	PROC07	Self-denial
0.037740845	0.109647036	SEX1	Females
0.069391442	-0.282351383	SEX2	Males
0.177320202	-0.087652779	TECH01	Kill
0.150426033	-0.118546949	TECH02	Injure/cause illness
0.087700507	0.049594182	TECH03	Cause sterility
0.071561463	-0.062414312	TECH04	Influence love
0.131858928	0.062333655	TECH05	Cause economic harm
0.204474388	0.005721649	TECH06	Cause catastrophe
0.048823229	-0.152919102	TECH07	Attack out-group members
0.162620164	0.040973411	TECH08	Cause other harm
0.001771147	0.254816794	TECH10	Unintentional harm
-0.072751257	0.242352218	TECH11	Evil eye/blasting word
0.196313525	-0.328871004	TECH12	Spells, charms, material magic
0.228132443	-0.162545476	TECH13	People pay practitioner
0.081445622	0.063840791	TECH14	Attack with thoughts

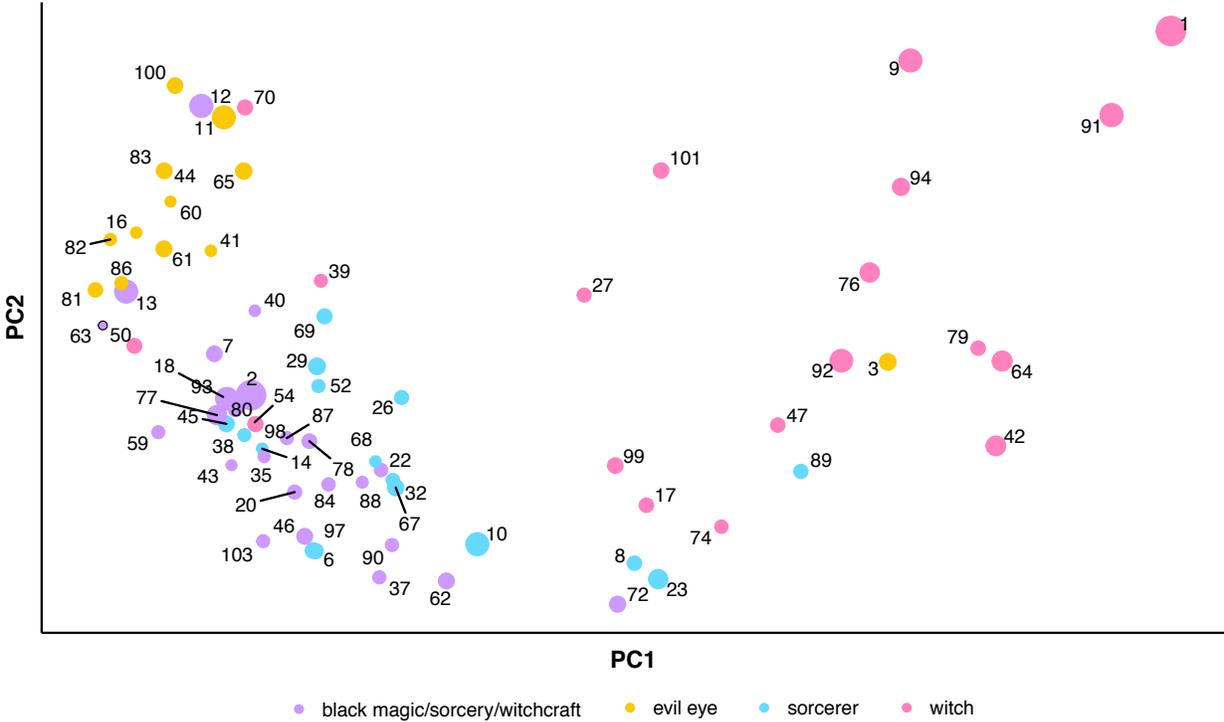
Supplementary Table 3. Factor matrix for the second PCA (excluding lycanthropes and cannibals/ghouls). The coloring corresponds with the value of the loading, ranging from blue (highly positive) to white (zero) to red (highly negative).

LOADINGS (PC ₁)	LOADINGS (PC ₂)	VARIABLE	DESCRIPTION
0.228875364	0.116352371	ABILo1	Fly
0.049641688	0.036356102	ABILo2	Invisibility
0.127006737	0.05678525	ABILo3	Soul travel
0.246262817	0.12052557	ABILo4	Animal transformation
0.20778724	0.137046975	BEHAo1	Cannibalism
0.216388335	-0.057754209	BEHAo2	Corpse desecration
0.030527401	0.035141165	BEHAo3	Opposite actions
0.036728901	-0.039897127	BEHAo5	Incest
0.041948057	-0.008773707	BEHAo6	Necrophilia
0.056134042	0.028960119	BEHAo7	Nymphomania
0.009997242	-0.014861709	BEHAo8	Sexual obscenities for transformation
0.124792875	0.111379214	BEHAo9	Nudity
0.040382338	0.030539082	BEHA10	Bad hygiene
0.026581051	0.007963018	BEHA11	Association with excretion
0.235503469	0.093984618	BEHA12	Conspiracy, league, organization
0.231622423	0.123839946	BEHA13	Meet in secret
0.169404308	0.032828869	BEHA14	Harm family members
0.308188083	0.007980719	BEHA15	Nighttime activity
0.264562555	-0.017549985	BEHA16	Animal familiars
0.171472842	-0.321135918	BEHA19	Magicians
0.103726136	-0.112421558	BEHA20	Political leaders
-0.036273362	-0.150810834	CLASSo1	All people capable
-0.112526819	-0.042218485	CLASSo2	Unspecified who does harm
0.080974082	0.227551582	PHYSo1	Physiological differences
0.063274255	0.227208081	PHYSo3	Phys. differences enable powers
0.093087109	0.021398668	PHYSo4	Possession
0.068429372	0.040385215	PHYSo5	Other differences
0.170139171	0.14060712	PROCo1	Hereditary
0.019018111	0.310144848	PROCo2	Inborn powers
0.259604156	-0.161894027	PROCo3	Learn powers

0.108845558	0.111047641	PROC04	Consume substance to gain powers
0.105364277	-0.027170925	PROC05	Kill someone to gain powers
0.10942102	-0.216886496	PROC06	Work with spirit
0.00193257	-0.022643767	PROC07	Self-denial
0.049707252	0.118226412	SEX1	Females
0.028732843	-0.260092163	SEX2	Males
0.174335478	-0.142570826	TECH01	Kill
0.12948586	-0.118111619	TECH02	Injure/cause illness
0.10923776	0.063628021	TECH03	Cause sterility
0.085357626	-0.048812998	TECH04	Influence love
0.146883304	0.047576202	TECH05	Cause economic harm
0.194080695	0.006540465	TECH06	Cause catastrophe
0.031996638	-0.100230058	TECH07	Attack out-group members
0.16704081	0.045305553	TECH08	Cause other harm
0.019645387	0.335904906	TECH10	Unintentional harm
-0.076381175	0.288579983	TECH11	Evil eye/blasting word
0.167477637	-0.329774269	TECH12	Spells, charms, material magic
0.194892256	-0.083355717	TECH13	People pay practitioner
0.103053642	0.071853141	TECH14	Attack with thoughts

Supplementary Figure

Supplementary Figure 1. Practitioners of mystical harm in principal-components space given scores from the second PCA (excluding lycanthropes and cannibals/ghouls). Practitioners are colored according to the terms used by the ethnographer(s) who described them. The size of a point denotes the number of paragraphs coded in that society (e.g., a larger point means more paragraphs were tagged for mentioning sorcery), while numbers correspond to unique ID numbers (see Supplementary Table 1).



References

- Aberle, D. F. (1951) *The psychosocial analysis of a Hopi life-history*. University of California Press.
- Abu-Lughod, L. (1986) *Veiled sentiments: Honor and poetry in a Bedouin society*. University of California Press.
- Adriani, N., & Kruijt, A. C. (1968) *The Bare'e-speaking Toradja of central Celebes (the East Toradja)*, vol. 1. Human Relations Area Files.
- Adriani, N., & Kruijt, A. C. (1969) *The Bare'e-speaking Toradja of central Celebes (the East Toradja)*, vol. 2. Human Relations Area Files.
- Ahern, E. M. (1973) *The cult of the dead in a Chinese village*. Stanford University Press.
- Ahern, E. M. (1978) The power and pollution of Chinese women. In: *Studies in Chinese society* ed. A. P. Wolf, pp. 269–290. Stanford University Press.
- Akiga, & East, R. (1939) *Akiga's story: The Tiv tribe as seen by one of its members*. Oxford University Press.
- Alvarsson, J.-Å. (1988) *The Mataco of the Gran Chaco: An ethnographic account of change and continuity in Mataco socio-economic organization*. Academiae Upsaliensis.
- Ames, D. (1959) Belief in “witches” among the rural Wolof of the Gambia. *Africa* 29:263–273.
- Archer, W. G. (1974) *The hill of flutes: Life, love, and poetry in tribal India: a portrait of the Santals*. University of Pittsburgh Press.
- Archer, W. G. (1984) *Tribal law And justice: A report on the Santal*. Concept.
- Baldus, H., & Lillios, I. (1974) *The social position of the woman among the Eastern Bororo*. Human Relations Area Files.
- Barker, J. (1967) *Memoir on the culture of the Waica*. Human Relations Area Files.
- Barton, R. F. (1919) *Ifuago law*. University of California Press.
<https://archive.org/details/ifugaolawroyoobartrich>
- Basedow, H. (1925) *The Australian aboriginal*. F. W. Preece and sons.
- Beierle, J. (1999) *Culture summary: Bahia Brazilians*. HRAF.
- Bennett, W. C. (1935) *The Tarahumara: An Indian tribe of northern Mexico*. The University of Chicago Press.
- Berque, J. (1973) *Social structures of the High Atlas*. Human Relations Area Files.
- Besmer, F. E. (1983) *Horses, musicians and gods: The Hausa cult of possession-trance*. Bergin & Garvey.
- Bogoras, W. (1907) *The Chukchee, part 2. - religion*. E. J. Brill Ltd. and G. E. Stechert.
- Bohannan, P., & Bohannan, L. (1969) *A source book on Tiv religion in 5 volumes*. Human Relations Area Files.
- Bollig, L. (1967) *The inhabitants of the Truk Islands: religion, life and a short grammar of a Micronesian people*. Human Relations Area Files.
- Burling, R. (1963) *Rengsangri: Family and kinship in a Garo village*. University of Pennsylvania Press.
- Cerulli, E. (1959) *Observations on the Moslem movement in Somaliland*. Human Relations Area Files.

- Chagnon, N. A. (1968) *Yanomamö: The fierce people*. Holt, Rinehart, and Winston.
- Chapman, A. (1982) *Drama and power in a hunting society: The Selk'nam of Tierra del Fuego*. Cambridge University Press.
- Cipriani, L. (1961) Hygiene and medical practices among the Onge (Little Andaman). *Anthropos* 56:481–500. <http://ehrafworldcultures.yale.edu/document?id=az02-006>
- Cohen, A. (1969) *Custom & politics in urban Africa: A study of Hausa migrants in Yoruba towns*. University of California Press.
- Cohen, R. (1967) *The Kanuri of Bornu*. Holt, Rinehart, and Winston.
- Colbacchini, A., & Albisetti, C. (1996) *The eastern Bororo Orarimogodogue of the eastern plateau of Mato Grosso*. HRAF.
- Damas, D. (1996) *Culture summary: Copper Inuit*. Human Relations Area Files.
- De Laguna, F. (1972) *Under Mount Saint Elias: The history and culture of the Yakutat Tlingit*. Smithsonian Institution Press.
- Debrunner, H. W. (1961) *Witchcraft in Ghana: A study on the belief in destructive witches and its effect on the Akan tribes*. Presbyterian Book Depot Ltd.
- Diamond, N. (1969) *K'un Shen: a Taiwan village*. Holt, Rinehart, and Winston.
- Ducey, P. R. (1956) *Cultural continuity and population change on the Isle of Skye*. Columbia University.
- Early, J. D., & Peters, J. F. (1990) *The population dynamics of the Mucajai Yanomama*. Academic Press.
- Emmons, G. T., & De Laguna, F. (1991) *The Tlingit Indians Anthropological Papers of the American Museum of Natural History* Vol. 70. University of Washington Press and the American Museum of Natural History. <http://digitallibrary.amnh.org/handle/2246/253>
- Evans-Pritchard, E. E. (1937) *Witchcraft, oracles, and magic among the Azande*. Clarendon Press.
- Faulkingham, R. H. (1971) *Political support in a Hausa village*. Michigan State University.
- Field, M. J. (1970) *Search for security: An ethno-psychiatric study of rural Ghana*. W. W. Norton & Company.
- Firth, R. (1939) *Primitive Polynesian economy*. George Routledge & Sons.
- Firth, R. (1954) The sociology of “magic” in Tikopia. *Sociologus* 4:97–116.
- Firth, R. (1970) *Rank and religion in Tikopia: A study in paganism and conversion to Christianity*. Beacon Press.
- Gallin, B. (1966) *Hsin Hsing, Taiwan: A Chinese village in change*. University of California Press.
- Ganson, B. A. (1994) *Better not take my manioc: Guarani religion, society, and politics in the Jesuit missions of Paraguay*. University of Texas at Austin.
- Gatschet, A. S. (1890) *The Klamath Indians of southwestern Oregon*. Government Printing Office. <https://archive.org/details/klamathindiansofo2gatsuoft>
- Geddes, A. (1955) *The Isle of Lewis and Harris: A study in British community*. Edinburgh University Press.
- Gluckman, M. (1955) *The judicial process among the Barotse of northern Rhodesia*. The University of Manchester.
- Godwin-Austen, H. H. (1872) On the stone monuments of the Khasi hill tribes, and of some

- of the peculiar rites and customs of the people. *The Journal of the Anthropological Institute of Great Britain and Ireland* 1:122–143.
- Goldfrank, E. S. (1966) *Changing configurations in the social organization of a Blackfoot tribe during the reserve period (the Blood of Alberta, Canada)*. University of Washington Press.
- Goldman, I. (1963) *The Cubeo: Indians of the Northwest Amazon*. University of Illinois Press.
- Goswami, M. C., & Majudmar, D. N. (1968) A study of social attitudes among the Garo. *Man in India* 48:55–70.
- Graham, P. (1987) *Iban shamanism: An analysis of the ethnographic literature*. Department of Anthropology, Research School of Pacific Studies, the Australian National University.
- Greenberg, J. H. (1946) *The influence of Islam on a Sudanese religion*. J. J. Augustin.
- Griaule, M., & Winchell, J. H. (1986) *Dogon masks*. Human Relations Area Files.
- Gusinde, M. (1971) *The Fireland Indians, vol. 1: The Selk'nam, on the life and thought of a hunting people of the Great Island of Tierra del Fuego*. Human Relations Area Files.
- Hanks, J. R. (1963) *Maternity and its ritual in Bang Chan*. Cornell University, Department of Asian Studies, Southeast Asia Program.
- Harrell, S. (1974) *Belief and unbelief in a Taiwan village*. Stanford University.
- Hatt, D. G. (1974) *Skullcaps and turbans: Domestic authority and public leadership among the Idaw Tanan of the western High Atlas, Morocco*. University of California, Los Angeles.
- Helander, B. (1988) *The slaughtered camel: Coping with fictitious descent among the Hubeer of southern Somalia*. Uppsala University.
- Herskovits, M. J. (1934) *Rebel destiny: Among the bush Negroes of Dutch Guiana*. Whittlesey House, McGraw-Hill Book Company.
- Hocart, A. M. (1929) *Lau Islands, Fiji*. Bernice P. Bishop Museum.
- Hoffman, B. G. (1967) *The structure of traditional Moroccan rural society*. Mouton & Co.
- Howe, J. (1986) *The Kuna gathering: Contemporary village politics in Panama*. University of Texas Press.
- Human Relations Area Files (1967) The HRAF quality control sample universe. *Behavior Science Notes* 2:81–88.
- Hunt, M. (1962) *The dynamics of the domestic group in two Tzeltal villages: A contrastive comparison*. University of Chicago.
- Hutchinson, H. W. (1957) *Village and plantation life in northeastern Brazil*. University of Washington Press.
- Irvine, J. T. (1973) *Caste and communication in a Wolof village*. University of Pennsylvania.
- Itkonen, T. I. (1984) *The Lapps in Finland up to 1945, vol. 2*. Werner Söderström Osakeyhtiö. ehrafworldcultures.yale.edu/document?id=epo4-017
- Jenness, D. (1922) *The life of the Copper Eskimos*. F. A. Acland.
- Karsten, R. (1932) *Indian tribes of the Argentine and Bolivian Chaco: Ethnological studies*. Akademische Buchhandlung.
- Kemp, P. (1935) *Healing ritual: Studies in the technique and tradition of the southern Slavs*. School of the Slavonic and East European Studies, University of London, Faber and Faber Limited.
- Kennedy, J. G. (1978) *Tarahumara of the Sierra Madre: Beer, ecology, and social organization*. AHM Publishing.

- Lagae, C. R. (1999) *The Azande or Niam-Niam: Zande organizations, religious and magical beliefs, family customs*. HRAF.
- Lambrech, F. (1955) The Mayawyaw ritual: VI. Illness and its ritual. *Journal of East Asiatic Studies* 4:1–155.
- Lambrech, F. (1957) The Mayawyaw ritual: VII. Hunting and its ritual. *Journal of East Asiatic Studies* 6:1–28.
- Landes, R. (1937) *Ojibwa sociology*. Columbia University Press.
- Landgraf, A. J. (2016) An introduction to the logisticPCA R package. <https://cran.r-project.org/web/packages/logisticPCA/vignettes/logisticPCA.html>. Accessed 11 July 2018
- Landgraf, A. J., & Lee, Y. (2015) *Dimensionality reduction for binary data through the projection of natural parameters arXiv preprint arXiv:1510.06112* .
- Leach, E. R. (1961) *Pul Eliya, a village in Ceylon: A study of land tenure and kinship*. Cambridge University Press.
- Lewis, I. M. (1961) *A pastoral democracy: A study of pastoralism and politics among the northern Somali of the Horn of Africa*. Oxford University Press.
- Lewis, I. M. (1963) Dualism in Somali notions of power. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 93:109–116.
- MacDougall, R. D. (1971) *Domestic architecture among the Kandyan Sinhalese*. Cornell University.
- Mahony, F. J. (1971) *A Trukese theory of medicine*. University Microfilms.
- Mair, L. P. (1934) *An African people in the twentieth century*. Routledge & Sons.
- Majudmar, D. N. (1978) *A study of culture change in two Garo villages*. Anthropological Survey of India, Government of India.
- Malinowski, B. (1922) *Argonauts of the western Pacific: An account of native enterprise and adventure in the archipelagoes of Melanesian New Guinea*. George Routledge & Sons, Ltd.
- Man, E. H. (1932) *On the aboriginal inhabitants of the Andaman Islands*. The Royal Anthropological Institute of Great Britain and Ireland.
- Marak, K. R. (1997) *Traditions and modernity in matrilineal tribal society*. Inter-India Publications.
- Marshall, D. S. (1950) *Cuna folk: A conceptual scheme involving the dynamic factors of culture, as applied to the Cuna Indians of Darien*. Harvard University.
- Masters, W. M. (1953) *Rowanduz: A Kurdish administrative and mercantile center*. University of Michigan.
- Maxwell, K. B. (1983) *Bemba myth and ritual: The impact of literacy on an oral culture*. P. Lang.
- McCormack, A. P. (1964) Khasis. In: *Ethnic Groups of mainland Southeast Asia* eds. F. M. Lebar, G. C. Hickey, & J. K. Musgrave, pp. 105–112. Human Relations Area Files.
- McKim, F. (1947) *San Blas: An account of the Cuna Indians of Panama; The forbidden land: Reconnaissance of upper Bayano River, R.P., in 1936: Two posthumous works*. Etnografiska Museet.
- Merker, M. (1971) *The Masai: Ethnographic monograph of an East African Semite people*. Human Relations Area Files.
- Merrill, W. L. (1988) *Rarámuri souls: Knowledge and social process in northern Mexico*.

- Smithsonian Institution Press.
- Messing, S. D. (1985) *Highland plateau Amhara of Ethiopia*. Human Relations Area Files.
- Métraux, A. (1943) Suicide among the Matakó of the Argentine Gran Chaco. *América Indígena* 3:199–210.
- Métraux, A. (1959) *Report on the ethnography of the Matakó Indians of the Argentine Gran Chaco*. Human Relations Area Files.
- Montagne, R. (1973) *The Berbers and the Makhzen in the south of Morocco: Essay on the political transformation of the sedentary Berbers (the Chleuh group)*. Human Relations Area Files.
- Murie, J. R. (1914) Pawnee Indian societies. *Anthropological Papers of the American Museum of Natural History* 9:543–644.
- Naroll, R. (1967) The proposed HRAF probability sample. *Behavior Science Notes* 2:70–80. doi:10.4135/9781412953948
- Nash, J. C. (1970) *In the eyes of the ancestors: Belief and behavior in a Mayan community*. Yale University Press.
- Nordenskiöld, E. (1930) *Picture-writings and other documents by Néle, Charles Slater, Charlie Nelson and other Cuna Indians*. Elanders Boktryckeri Aktiebolag.
- Nordenskiöld, E. (1966) *Miracle men and diviners among the Cuna Indians*. Human Relations Area Files.
- Nordenskiöld, E., & Kantule, R. P. (1938) *An historical and ethnological survey of the Cuna Indians*. Göteborg Museum.
- Orley, J. H. (1970) *Culture and mental illness: A study from Uganda*. The Makere Institute of Social Research and East African Publishing House.
- Parker, A. C. (1913) *The code of Handsome Lake, the Seneca prophet*. University of the State of New York.
- Parman, S. (1990) *Scottish crofters: An historical ethnography of a Celtic village*. Holt, Rinehart, and Winston.
- Pavlovic, J. M. (1973) *Folk life and customs in the Kragujevac region of the Jasenica in Sumdaija*. Human Relations Area Files.
- Peshkin, A. (1972) *Kanuri schoolchildren: Education and social mobilization in Nigeria*. Holt, Rinehart, and Winston.
- Pierson, D. (1967) *Negroes in Brazil*. Southern Illinois University Press.
- Pilz, A. (1988) *Manang Jabing Anak Incham: A study of an Iban healer, Sarawak*. D. Reimer.
- Playfair, A. (1909) *The Garos*. David Nutt. <https://archive.org/details/in.ernet.dli.2015.500276>
- Pospisil, L. J. (1958) *Kapauku Papuans and their law*. Yale University: Department of Anthropology.
- Pospisil, L. J. (1978) *The Kapauku Papuans of West New Guinea*. Holt, Rinehart, and Winston.
- Price, R. (1990) *Alabi's world*. Johns Hopkins University Press.
- Pryde, D. (1972) *Nunaga: My land, my country*. M. G. Hurtig Ltd.
- R Core Team (2015) R: A language and environment for statistical computing. R Foundation for Statistical Computing. <http://www.r-project.org/>
- Reichel-Dolmatoff, G. (1971) *Amazonian cosmos: The sexual and religious symbolism of the Tukano Indians*. University of Chicago Press.

- Reminick, R. A. (1974) The evil eye belief among the Amhara of Ethiopia. *Ethnology* 13:279–291.
- Reynolds, B. (1963) *Magic, divination and witchcraft among the Barotse of northern Rhodesia*. Chatto and Windus.
- Richards, A. I. (1935) A modern movement of witch-finders. *Africa* 8:448–461.
- Rogers, E. S. (1962) *The Round Lake Ojibwa*. Ontario Department of Lands and Forests for the Royal Ontario Museum. <https://archive.org/details/roundlakeojibwaooroge>
- Rongmuthu, D. S. (1960) *The folk-tales of the Garos*. University of Gauhati, Department of Publications.
- Sandin, B. (1967) *The Sea Dayaks of Borneo: Before White Rajah rule*. MacMillan and Co.
- Sandin, B. (1980) *Iban adat and augury*. Penerbit Universiti Sains Malaysia for School of Comparative Sciences.
- Saso, M. R. (1974) Orthodoxy and heterodoxy in Taoist ritual. In: *Religion and ritual in Chinese society* ed. A. P. Wolf, pp. 325–336. Stanford University Press.
- Schaden, E., & Lewinsóhn, L.-P. (1969) *Fundamental aspects of Guaraní culture*. Human Relations Area Files.
- Scheffer, J. (1704) *The history of Lapland: Containing a geographical description, and a natural history of that country; with an account of the inhabitants, their original, religion, customs, habits, marriages, conjurations, employments, etc.* Tho. Newborough, at the Golden-Ball in St. Paul's-Church-Yard and R. Parker under the Royal Exchange. <https://archive.org/details/historyoflaplandoosche>
- Schultz, J. W. (1930) *The sun god's children*. Houghton Mifflin.
- Seaman, G. (1981) The sexual politics of karmic retribution. In: *The anthropology of Taiwanese society* eds. E. M. Ahern & H. Gates, pp. 381–396. Stanford University Press.
- Selden, S. W. (1966) *The legend, myth and Code of Deganawidah and their significance to Iroquois cultural history*. Indiana University.
- Sieroszewski, W. (1993) *The Yakut: An experiment in ethnographic research*. Human Relations Area Files.
- Spencer, B., & Gillen, F. J. (1927) *The Arunta: A study of a Stone Age people*. Macmillan and Co., Ltd.
- Spencer, P. (1988) *The Maasai of Matapato: A study of rituals of rebellion*. Indiana University Press.
- St. Johnston, T. R. (1918) *The Lau Islands (Fiji) and their fairy tales and folk-lore*. The Times Book Co.
- Stefánsson, V. (1913) *My life with the Eskimo*. The Macmillan Co.
- Stegmiller, P. F., & Knight, E. (1956) *The religious life of the Khasi*. Human Relations Area Files.
- Stern, T. (1965) *The Klamath Tribe: A people and their reservation*. University of Washington Press.
- Sutlive, V. H. (1992) Tun Jugah of Sarawak: Colonialism and Iban response. In: . Fajar Bakti.
- Talayesva, D. C., & Simmons, L. W. (1942) *Sun Chief: The autobiography of a Hopi Indian*. Yale University Press.
- Tambiah, S. J. (1983) On flying witches and flying canoes: The coding of male and female

- values. In: *The Kula: New perspectives on Massim exchange* eds. J. W. Leach & E. Leach, pp. 171–200. Cambridge University Press.
- Textor, R. B. (1973) *Roster of the gods: An ethnography of the supernatural in a Thai village*. Human Relations Area Files.
- Tschopik, H. (1946) *The Aymara*. Smithsonian Institution.
- Tschopik, H. (1951) The Aymara of Chucuito, Peru. 1, Magic. *Anthropological Papers of the American Museum of Natural History* 44:133–308.
- Turnbull, C. M. (1965a) *Wayward Servants: The Two Worlds of the African Pygmies*. Natural History Press.
- Turnbull, C. M. (1965b) *The Mbuti Pygmies: An Ethnographic Survey Anthropological Papers of the American Museum of Natural History* Vol. 50. The American Museum of Natural History.
- van Beek, W. E. A. (1994) The innocent sorcerer: Coping with evil in two African societies (Kapsiki & Dogon). In: *Religion in Africa: Experience and expression* eds. T. D. Blakely, W. E. A. van Beek, & D. L. Thompson, pp. 196–228. James Currey.
- Wafer, L. (1934) *A new voyage and description of the Isthmus of America*. Hakluyt Society.
- Wallace, A. F. C. (1972) *The death and rebirth of the Seneca*. Vintage Books.
- Weltfish, G. (1965) *The lost universe: With a closing chapter on "The universe regained."* Basic Books.
- Wilbert, J. (1995) *The Sanema*. HRAF.
- Wolf, A. P., & Huang, C. (1980) *Marriage and adoption in China, 1845-1945*. Stanford University Press.