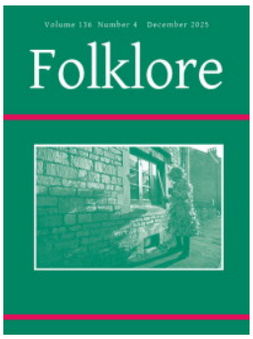

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RESEARCH ARTICLE

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On Amazonian Magical Darts

James Andrew Whitaker & Lewis Daly

Abstract

This article examines pathogenic projectiles among the Makushi people in Guyana. Based on ethnographic fieldwork among Makushi in North Rupununi, the 'magical' darts known as *waawî* are described and contrasted with accounts of similar phenomena across Amazonia. For the Makushi, waawî seem to hold an ambiguous existence as both entities and objects. As embodiments of spirit-helpers, these pathogenic darts are fabricated by shamans yet maintain a paradoxical existence that goes beyond notions of nature and culture. Makushi people also give somewhat similar accounts of different kinds of pathogenic objects that are used by other-than-human owners and masters, as well as certain stars. The article concludes with general comments about the character of spirit-darts in Amazonian cosmologies, engaging theory from animism and perspectivism. We argue that these Makushi shamanic concepts shed new light on debates around animism in Amazonia, drawing into question familiar dualisms between the material/immaterial, body/spirit, and subject/object.

Introduction

Often described in terms of arrows or darts, magical projectiles linked to illness or death are encountered in myths and cosmological narratives among many societies around the world. In European folklore, these notions have sometimes been associated with elves, fairies, and additional other-than-human beings. Concepts related to such magical projectiles are sometimes also linked to the actions and cosmologies of witches and warlocks. Somewhat similar ideas are found in other areas of the world in a variety of contexts and are frequently associated with ongoing 'magical' practices.[1] Although they should not be conflated with notions from European folklore, concepts of magical projectiles have also been documented among some Indigenous societies in lowland South America (Amazonia). In particular, Amazonian folklore alerts us to issues concerning these themes that draw into question familiar dualisms between the material/immaterial, body/spirit, and subject/object. There is a need for a more robust range of regional case studies focused on these themes across the region.

In Amazonia, pathogenic projectiles and related objects and beings are often associated with illnesses caused by shamans and sorcerers, as well as sometimes by certain other-than-human beings. Human owners of such potential weapons are often thought to acquire them from other-than-human allies, such as spirits and various forest beings (Chaumeil 2001; Crépeau 2008). People training to be shamans may also sometimes acquire them from their teachers or through trade (Harner 1972). Regional shamanic healing practices commonly centre around removal of such objects from the bodies of patients (Brown 1988). Pathogenic projectiles belonging to shamans sometimes play a role in the removal of external projectiles lodged in patients (Rodgers 2013). These objects can also serve a protective function for shamans (Chaumeil 2001; Crépeau 2008). They are frequently conceptualized in terms of darts or arrows, but they are generally differentiated from the physical arrows and darts used in hunting. Magical projectiles are central to many Indigenous theories of aetiology and pathogenesis, which posit other human beings' or sometimes metapersons' actions and intentionalities as causes of sickness and death.[2] Shamans are often blamed for cases involving such disease-causing projectiles. In addition to shamans sometimes being suspected of sorcery in their communities (Brown 1988; Whitehead and Wright 2004), they sometimes use such weapons or other spiritual instruments (charms, spells, incantations, etc.) to retaliate against or otherwise attack other groups. The contexts in which such objects are acquired and used vary quite widely.

Pathogenic projectiles are often complex and multidimensional objects, which can be variously conceptualized as spirits, power, or even as knowledge among different Indigenous peoples in Amazonia (Costa 2017, 42; Crépeau 2008; Kohn 2013, 117–18). For example, Jean-Pierre Chaumeil writes that:

> In several indigenous languages, the word for *dart* also means spirit, force, supernatural power, energy, or knowledge (in Quechua, the word for *dart* is *yachay*, from *yacha*: 'to know'). It would be difficult to define either of these concepts separately. The notion of power, for instance, inasmuch as it allows itself to be apprehended as such, designates or implies in most societies a force (vital, magic, warlike, or shamanic), the mastery of visions or substances (magic, fragrant, tasty etc.) or knowledge (ritual, spiritual, esoteric). According to this view, magic darts are as much principles of knowledge, or a body of knowledge, as they are a pathogenic or therapeutic power. (Chaumeil 2001, 273)

This highlights the complexity and diversity of local conceptualizations of pathogenic projectiles across Amazonia. However, the range of meanings is often greater across than within societies. In particular Indigenous cosmologies, these concepts are often quite clear and consistent.

The theme of 'magical' darts or arrows as pathogenic projectiles has been documented among many Indigenous groups across lowland South America. Among others, these include in Brazil the Cashinahua, Desana, Kanamari, Kuikuro, Parakana, and Ikpeng (Buchillet 2004; Costa 2017, 42; Fausto 2007, 502; Lagrou 2004; Rodgers 2013); in Colombia the Desana and Siona (Langdon 2017; Reichel-Dolmatoff 1979); in Ecuador the Achuar, Runa, Shuar, and Canelos Quichua (Chaumeil 2001; Descola 1994; Deshoulliere and Buitron 2019; Harner 1972, 1973; Kohn 2013, 117–18; Santos-Granero 2007, 2009; Taylor 2014; Whitten 2015; Whitten and Whitten 2008); in Guyana the

Makushi, Akawaio, and Patamona (Butt Colson and Armellada 1990; Cooper 2015, 181 and 188; 2018, 12; Daly 2015; Daly and Shepard 2019; Diniz 1971; Shepard and Daly 2023); in Peru the Aguaruna, Cocama, Keshwa Lamas, Matsigenka, Shipibo, and Urarina (Barbira-Freedman 2015; Brabec de Mori 2018, 89; Brown 1988; Shepard 1999, 2004; Walker 2013; 2015, 47 and 51); in Suriname the Trio (Brightman 2012, 559); and in Venezuela the Pemon, Piaroa, and Warao (Lewy 2011, 85 and 397; Wilbert 1972). Such documentation has also occurred among Mestizo people in Peru and the Upper Amazon (Beyer 2009; Luna 1984, 143). The theme of magical darts has been ethnographically depicted and theorized in various ways, which range from an ethnovirological framework of 'magic darts as viruses' (Chaumeil 2001), to a broader understanding involving eco-semiotic messaging (Daly and Shepard 2019), to a more general conceptualization of shamanic substances (Crépeau 2008).

Although frequently mentioned by ethnographers, the topic of pathogenic projectiles has received minimal attention from folklorists in relation to Amazonia. This is despite its resonance with the theme of magical darts and arrows associated with other-than-human entities in European folklore (see Bonser 1926; Davidson 1956, 1960; Dowd 2018, 2019; Evans Wentz 1911; Hall 2005a, 2005b, 2007; McGowan 2009; Meehan 1906; Wilby 2006). A comparative description of this theme across Amazonia and Europe is far beyond the scope of this article and would need to take into account the divergent ontologies and histories involved in the different contexts. Instead of focusing on comparisons, our aim in this article is to provide an ethnographic account and case study of Makushi narratives concerning magical projectiles and their different contexts based on our ethnographic fieldwork in the Guyanese Makushi villages of Surama, Yupukari, and Rewa, as well as across the North Rupununi region in general.

The Makushi

The Makushi are an Indigenous people living across the borderlands of Guyana, Brazil, and Venezuela in northern Amazonia. They speak a Cariban language (Makushi) and have a long-documented history of interactions with Europeans that traces back to the eighteenth century (Whitaker 2016a, 2016b, 2025a). During our fieldwork among the Makushi in Guyana, both authors were provided with detailed accounts of pathogenic projectiles used in shamanism, sorcery, and by 'other-than-human beings' (Hallowell 1960) or 'metapersons' (Sahlins 2022). Makushi descriptions of these objects are embedded within local shamanic cosmologies and ontologies. Makushi shamanism is based on strategic alliances with spirits and other beings. These beings are frequently engaged during altered states of consciousness, often facilitated through the ingestion of tobacco (see Daly 2015; Whitaker 2025b). Unlike many Indigenous groups in western Amazonia, such as the Achuar and the Yagua, the Makushi and their Indigenous neighbours in the Guianas do not use ayahuasca in shamanism (see also Chaumeil 2001, 273; Whitten and Whitten 2008), nor do they rely on other prominent psychotropic plants such as *yakoana* for shamanic trance (see Kopenawa and Albert 2013). Nevertheless, as described in the following, they

provide very specific accounts of pathogenic projectiles within the context of their broader shamanic practices.

The Makushi term *waawî* refers to shamanic projectiles that are often described locally as 'spirit-darts'.[3] They are animate entities, which sometimes manifest as small physical objects, such as quartz crystals or stones. These tiny darts, which are invisible to non-shamans, are shot, fired, or launched (like arrows or missiles) by shamans (*pia'san*) and assault sorcerers (*kanaima*) into the bodies of their enemies, causing sickness and, sometimes, death. They are most commonly conceptualized as arrows or darts (the Makushi still use the bow and arrow, called *pîrîu*, for hunting and fishing today, and used blowpipes, called *kura'*, in the past). The one who is able to control and harness waawî for purposeful ends is the shaman (pia'san), for whom they are the principal auxiliary agents (or familiar spirits). These beings are often described locally as the shaman's 'helpers' and likened to hummingbirds, which are also prominent shamanic spirits. They are among the most important agentive beings in shamanic rituals (such as healing and cursing).

In Yupukari and Rewa, we found that local knowledge about magical darts was largely concentrated among a few older male villagers, although some older women—particularly local healers (*taren esak*, literally 'spell owners')—had knowledge about these projectiles, their association with certain plants, and, more broadly, shamanic healing and aetiology. This is consistent with a tendency in many Makushi villages to associate older people (both men and women) with heightened traditional and spiritual knowledge. However, there were sometimes concerns among younger villagers about the potential consequences and effects of this and similar objects, particularly in relation to health, illness, and interpersonal conflicts. Depending upon circumstances, intentions, and relational positions, traditional shamanic practices and knowledge can be either beneficent and helpful or violent and harmful. There is much ambivalence and the ritual specialists and elders who possess these forms of power and knowledge are often feared.[4]

Although waawî are associated with shamanism (see Daly 2015; Daly and Shepard 2019),[5] various other-than-human (yet often anthropomorphic) beings, collectively called *oma'kon* (usually translated as 'monsters', 'dangerous beings', or 'evil spirits'), such as *kîima* (a water-dwelling snake spirit) and *okraimî* (a human-like cannibal spirit) can shoot invisible spirit-darts into humans, causing sickness and death. As Aunty Meredith, a Makushi elder in her sixties,[6] described to Lewis Daly:

> *Oma* [monsters] use them arrows. *Okraimî*—that is a dangerous spirit, a cannibal, but he looks like a human being, a person. It will shoot you, in the hands, in the eyes—it kills you with his arrow, his dart, but it is a strange arrow, like a wasp [*maribunta*]. (Interview, Yupukari village, September 2012)

There are also pathogenic arrows or dart-like objects that are said to be 'shot' into people by certain constellations in the sky. The notion that shamans, sorcerers, dangerous spirits, as well as constellations and other non-human forces use pathogenic arrows to cause harm suggests something like an ecology of dart-like projectiles circulating in the shamanic cosmos, more widely than the merely human. This points to the centrality of dart-like entities in Makushi disease aetiology and

pathology. These invisible pathogenic projectiles pass into and out of human bodies, causing sickness (usually evidenced by swelling), typically as the result of some kind of malevolent agency (e.g. an enemy shaman or kanaima). This sickness can only be cured by shamanic intervention.

Despite similarities with shamanic waawî darts, these various arrows are often treated as different types of objects in everyday and ritual praxis. These three contexts—shamanism and sorcery, other-than-human entities, and certain stars—are discussed in detail in the following sections. The darts known as waawî seem to be more associated with shamanism than with sorcery among the Makushi in Yupukari. This association highlights a broader fluidity between shamanism and sorcery (Brown 1988). In relation to this, Stephan Beyer writes that:

> There is an ambiguity inherent in shamanic practice, where the dangerous work of healing and sorcery intersect. Because shamans possess spirit darts, and with them the power to kill, the boundary between sorcerer and shaman is indistinct. (Beyer 2009, 46)

However, the two practices can be analytically somewhat differentiated, despite the considerable overlap between both practices and practitioners. While shamanism generally centres around practices of curing and healing, sorcery involves 'conscious and intentional act[s] to cause harm to a specific person or community' (Buchillet 2004, 113; see Whitaker 2021a, 2025a). The same person may engage in both practices. In the case of waawî, these categories intersect and shamans are linked to magical assaults using such projectiles in addition to healing. As described in the following, this also extends to shamans possessing abilities akin to those of 'master', 'owner', or 'guardian' beings, which are often described as short, capricious, and most often invisible beings that look like humans and live in remote areas within the Makushi landscape. As a particular form of sorcery, kanaima is also associated with illness and death through the insertion of different kinds of substances, such as plants and snakes' teeth, into human bodies.[7] However, these substances often seem different from the pathogenic projectiles discussed here.

Based on long-term ethnographic fieldwork conducted separately by Lewis Daly and James Andrew Whitaker since 2012, which included immersive participant observation, semi-structured and open-ended interviews, as well as ethnohistorical (Whitaker) and ethnobotanical (Daly) work, this article examines local narratives and lived folklore concerning pathogenic magical projectiles among the Makushi people in Guyana.[8] The article discusses the range of such objects locally described by Makushi people and the ontological and cosmological foundations of these accounts. With an ethnographic focus, we describe Makushi conceptualizations of pathogenic projectiles while showing how they disrupt familiar dualities in Amazonia. In between these dualities, waawî are fabricated material objects that embody immaterial subjectivities and that centre other-than-human 'spirits' in perspectival 'bodies' under the sway of shamanic practitioners.[9] Overall, in the following, we present novel ethnographic accounts of shamanic darts unique to the Guianas, which diverge from the better described ethnographic accounts of darts (*tsentsak*) in western Amazonia.

Pathogenic Magical Projectiles among the Makushi

Makushi villagers in Yupukari and Rewa describe magical pathogenic projectiles within three contexts: uses by a pia'san (the Makushi term for a shaman) or piaiman (the more often used Guyanese Creole term for a shaman); uses by other-than-human entities (mostly dangerous spirits and metapersons inhabiting lakes, rivers, and mountains); and uses by certain stars (*siirikî*) or constellations during specific times of the year. The term waawî is generally only used in the context of shamanism or sorcery. However, all three contexts involve pathogenic arrow-like projectiles being intentionally shot, fired, or launched into human beings for purposes of causing disease-like conditions. Notions concerning such projectiles (whether conceptualized as material objects or as immaterial and spiritual beings) among the Makushi have been reported since at least the 1920s. According to William Curtis Farabee, writing in 1924 (see also Daly 2015, 286):

> Pains are due to the presence of foreign objects in the body of the patient, but the object need not be a material object. A natural material object, as a thorn, may enter the body and cause pain; this is a daily occurrence. An unknown object may be in the form of a spirit and as such may be sent into the body from a distance by one piazong [pia'san] and expelled by another. The principal duty of the piazong is to discover and to drive away these foreign spirits. (Farabee 1967, 72)

It should be noted that, despite clear continuities in accounts of waawî and related shamanic concepts, there is some variation across Makushi communities. Whitaker heard about such projectiles more often in Yupukari than in Surama. In contrast, villagers in Surama more frequently mentioned historical uses of curare and its application to projectiles in contexts of hunting and warfare. He heard relatively little in Surama about uses of waawî by shamans or of other magical projectiles by other-than-humans. Conversely, there was much congruence in descriptions of waawî between Yupukari and Rewa villages, as recorded by Daly.

Shamanism and Sorcery

In relation to shamanism, we were told by many local villagers in Yupukari and Rewa that waawî are a primary tool or instrument of the shaman. Aunty Anne, an elder and local healer from Yupukari, summed this up succinctly: 'Waawî is the piaiman's arrow' (April 2013). More specifically, we were told that *piaimen* sometimes shoot waawî into people to cause illness (*paran*). The reasons for doing this range from attacking a sorcerer who has harmed a patient, to attacking an enemy group, to carrying out a personal vendetta or animosity on the part of the piaiman. Furthermore, it can be used for both defensive and offensive purposes and against both enemies and non-enemies. In addition to being analytical, the difference here between shamanism and sorcery is often a moral and perspectival one. Whether one is a shaman or a sorcerer in large part depends on one's point of view (Viveiros de Castro 1998; see also Costa 2017, 42).

Regardless of the different reasons and circumstances, the physical impacts of waawî are generally described in consistent terms by Makushi villagers. The victim does not see the waawî, nor are they immediately aware they have been penetrated

by a dart, but they soon experience its negative effects. Emphasizing this point, Jane, a Makushi woman in her forties, told Whitaker that: 'In Makushi, they call it waawî—that is like what a piaiman shoots someone with. You cannot see it, but you feel the pain' (Yupukari, 15 August 2021). A couple of days later, Sarah, a Makushi woman in her fifties, suggested that waawî are used in the context of struggles between piaimen:

> If he [the piaiman] [is] jealous to the next piaiman then [he] will send the next waawî in spirit.[10] *Tektong* is spirit. And when he get [*sic*] checked, he will know that the next piaiman shoot him with waawî. But I can't shoot somebody with waawî because I'm not a *piailady*. So you must be careful. Sometimes waawî is here.[11] (Yupukari, 17 August 2021)

These descriptions by Jane and Sarah point out that waawî is both invisible and has a spiritual dimension, which can extend to it being conceptualized as a spirit, although it is often described more like an object, albeit one which is invisible to most people (non-shamans). Waawî objects may best be understood as physical embodiments of the shamanic spirit-helpers (see also Butt Colson and Armellada 1990, 41 n.47; Shepard 2004).[12] This characterization of waawî as having an equivocal existence as both an object (or, better, a composite of various materials) and a spirit requires us to think beyond Cartesian dualisms. Instead, waawî reflects a unique conceptual and empirical integration of object–subject, material–immaterial, and body–soul concepts and categories in Makushi ontology. The idea that spirit-darts are neither strictly material nor spiritual, but something in between, was already alluded to by Farabee in the 1920s (Farabee 1967, 72).

The accounts from Jane and Sarah, as well as broader articulations of waawî across Makushi communities, indicate that dart-based sorcery and shamanism is an ongoing phenomenon with relevance for villagers' lived experiences today. When Whitaker asked what waawî actually is in 2021, Sarah explained that one (at least a non-shaman) can never see it, but that one learns what it is from a pia'san. She mentioned that the physical symptoms involve swelling and a weakening of the legs. Only a pia'san is said to be able to treat this malady. More generally, waawî is often said to impact the limbs and particularly the lower body (the feet, lower legs, and knees), but also the neck and chest. It causes swelling and itching. Aunty Anne explained to Daly in 2013 that people are shot while sleeping by invisible waawî from a pia'san. They subsequently experience these symptoms. Sometimes waawî is left on the ground for someone to step on it. In addition to symptoms of sickness and swelling, attacks by waawî darts from shamans can also be fatal, as Marvin, an older Makushi man in Yupukari, described to Whitaker in 2021. Based on these accounts, waawî is intentionally shot by a pia'san into a different pia'san or into another unsuspecting victim. Its presence becomes known through its effects, which are associated with a variety of problems ranging from complications in the lower body to death.

Soon after his conversations with Jane and Marvin, Whitaker asked an older Makushi villager in Yupukari named Stephen about waawî in relation to its uses, appearance, and production by piaimen.

> Stephen: Well, waawî is a dangerous [*sic*] made by a piaiman. It is a small arrow and shoot up too like with Tamî'kan [i.e. the Pleiades, which are discussed further later]. But when those bad people—got some bad piaimen—and they shoot an arrow upstairs and then they will talk to the same arrow and tell it to shoot this person. And they shoot up in the air and wherever you going in your farm, or home, it will catch you and put you to death right there. And you dead. It is like a little marble and get blood inside. You can't see it with your bare eye, but you can if you are a piaiman now.
>
> Whitaker: How are they [waawî projectiles] made?
>
> Stephen: It was made from a small little arrow like this [motions to a small unidentified plant]. And when it go up and fetch you, and shoot it up to wherever you are. You not going to see it, but you gonna see it like. Gone down in your body and turns into a little marble. And when the next piaiman come and say: 'He dead with waawî.' And he gonna take it out and tell your family now. It's dangerous. When you're against somebody or something now.
>
> Whitaker: What do they [waawî projectiles] look like to a piaiman?
>
> Stephen: I can't even say, but anyway, that is their weapon for them, no? Like a missile for them. That is the bad boys' missiles. And shoot to Lethem and shoot you. And they say 'straight to James' and it not going to miss you. Them's magic people.(Yupukari, 26 August 2021)

Waawî was also described to Daly as being a shamanic missile, as well as a revolver. Stephen's account reiterates the conceptualization of waawî as invisible, pathogenic, and potentially lethal. He also repeats that it is both made and used by a pia'san. However, his account suggests some other aspects that resonate with comparative uses of pathogenic projectiles in other parts of Amazonia. For example, he seems to emphasize that part of the way that piaimen control waawî is by talking to it, which suggests that it is an entity (and potentially an ontologically animate one) in addition to being an object.[13] Daly also heard accounts of shamans talking, chanting, and singing to waawî in a shamanic register of Makushi used mostly to communicate with spirits.

Stephen also indicated that shamans can remove waawî from victims, which is consistent with some of the methods through which piaimen, as well as other shamans throughout Amazonia, heal people by extracting outside objects malevolently inserted into them (cf. Lévi-Strauss 1963). In addition, Stephen emphasized how waawî can be used at a distance, which he describes as similar to a 'missile' (see also Daly and Shepard 2019, 13). This again points to an ambiguous ontology of waawî as object-like but also an animate entity in its own right (see Crépeau 2008). Magical projectiles among some other groups in Amazonia are similarly considered animate entities (see Beyer 2009; Crépeau 2008). However, unlike accounts among Indigenous groups in other regions of Amazonia (see Chaumeil 2001; Harner 1972), Stephen did not suggest that waawî darts become incorporated into the body of the shaman. Among the Makushi, such projectiles seem to be conceptualized as external objects that are fabricated from both organic and inorganic materials. They seem to have a hardness that contrasts with their incorporation into the soft tissues of shamans in western Amazonia.[14] As animated projectiles, Makushi waawî seem to be more independent shamanic beings or entities than Shuar tsentsak.[15] As such, they contravene any kind of neat classification as either objects or subjects.

Collectively, our ethnographic data corroborate the aforementioned points, as well as the provenance of waawî. They are usually said to be made by shamans, in the sense of being fabricated from constituent materials, such as quartz, spikes, feathers, and smoke (see Costa 2017, 42). However, waawî are sometimes described as being 'gifts from the master spirits', referring to those powerful masters (*esak*) of the forests, mountains, and rivers who are the apex shamanic powers. Some Makushi villagers told Daly how they 'came from the *bina*', which refers here to powerful charms of plant and tree helper-spirits (see the following). Shamans therefore may receive their allied waawî from various shamanic spirits during their period of apprenticeship, before later forging the physical representations of these subjective beings. Daly was told that waawî 'is something like a marble with a little arrow inside; it has macaw feathers in it—to him [the pia'san], it is a person; the same marble changes into a person—then the pia'san talks to that person' (Rewa, June 2013). As such, waawî presents a unique case of both fabricated subjects and spiritual objects.

Consider the following quote, from Amoko (Grandpa) Edward, an elder from Rewa and the son of a famous shaman, who had undergone shamanic training himself in his youth:

> When you train as a piaiman, they [waawî] come by themselves to you. They are a gift from the master [esak], for becoming a miracle man. It passes like a hummingbird, it makes the same sound. (Rewa, July 2013)

Constructed of geological (inorganic rock) and/or biological (organic feathers, plants, and blood) materials, these composite objects, deployed in ritual, are physically embodied shamanic allies. To better understand exactly what these entities are, one can consult local descriptions of their appearance and materiality.

A number of interlocutors in Yupukari and Rewa commented on the comparative appearance of waawî, which were variously described as being like an arrow, a missile, a crystal, and a 'little marble' with blood or smoke inside (see also Daly and Shepard 2019, 13). Other villagers in Yupukari described its appearance in slightly different terms. For example, Beth, a middle-aged Makushi woman, told Whitaker that:

> They say [they are] like a little needle and they does take it out and put it in a bottle. And you does see it when they put it in a bottle. But normally you can't see it, only them piaimen and *obeah*[16] people does see it. (Yupukari, 9 August 2021)

Beth's description suggests that waawî can be thought of as a material object that is stored externally and that sometimes becomes visible when it is not being used in a shamanic capacity. Jerome, a middle-aged Makushi man, explained to Whitaker that:

> … I heard about the people talk about the waawî and them people put it on the road and you will mash it [when you step on it] and it will mash you so. You can't see it but it will hurt you. (Yupukari, 19 August 2021)

This mention of poison, as well as the placement of waawî on roads to harm people, evokes historical associations between Makushi people and curare poison (see also Beyer 2009, 85). During the nineteenth century, Makushi groups in British Guiana

were closely associated with curare, which was typically used as an arrow-tip poison in both hunting and warfare. It was often suggested that the Makushi made the strongest type of such poison in the region (see Hilhouse 1825, 27–28; Waterton 1973, 29; Whitaker 2016b, 95 and 100). Although our Makushi interlocutors rarely directly associated waawî and curare, accounts concerning waawî in Yupukari often resonated with historical narratives concerning curare in Guyana.[17]

Contemporary Makushi ethnobotany also reveals associations between waawî and poisonous plants. For example, they are associated with a category of 'magical' plant-charms called bina, many of which are toxic, irritating, bitter, or noxious (typically from the Araceae, Amaryllidaceae, Iridaceae, and Cyperaceae families, which are well known to contain potent phytochemicals) (Daly 2025; Van Andel et al. 2015; Whitaker et al. 2024). These 'magical' plants tend to have spikes, thorns, stings, and even microscopic crystals (raphides) with the appearance of needles (see Daly and Shepard 2024; Shepard and Daly 2022) in their tissues, which in some sense may evoke darts in the Makushi sensorium and in their vernacular conceptualizations of illness and aetiology. As shamanic charms, bina, like waawî, are primary shamanic beings (or entities), wielding significant power which the pia'san is able to use in shamanic healing or warfare. Thus, in addition to historical curare use among the Makushi, there seems also to be a practical and conceptual affiliation between waawî darts and other poisonous plants and botanical substances within the wider shamanic complex. This seems to highlight the presence of tiny crystalline structures reminiscent of the materiality of the darts themselves, as described by our interlocutors (see Daly and Shepard 2019; Shepard and Daly 2022).

In relation to the appearance and composition of waawî, Whitaker and Marvin had the following dialogue about waawî's appearance:

> Whitaker: So the waawî darts look like rocks?
>
> Marvin: They make it with any kind of … according to the grandfather, the porcupine spores they use, many things they could use. They could use the *kokorite* [palm] spikes then. Or the needles that you sew with. They could use it as a waawî.
>
> Whitaker: I have heard that waawî have feathers on them.
>
> Marvin: Yeah, they could feather them. [He takes a stick]. They put [a] little spike on [the] end, like porcupine spine and then put hummingbird feathers on them. And then they throw that thing and say to go and hit that man in his heart. And then that man die. But you got to be a real tobacco smoke man—that will help the evil works. (Yupukari, 22 August 2021)

This account points again to the object-like aspect of waawî and the variety of ways that it can be made (including using organic feathers, thorns, and spines) by piaimen (see also Daly and Shepard 2019, 13).[18] Certain manufactured goods (e.g. sewing needles) can also reportedly be used. The focus on organic spike-like objects is similar to the association between shamanic darts and chonta palms among several Indigenous groups in western Amazon. This association is so significant that shamans who work with such darts are often called *chonteros* there (Beyer 2009). Although our ethnographic data indicate that waawî can be fabricated from organic and/or inorganic materials, the construction of such darts is generally focused on inorganic

materials among the Makushi while it appears to be centred mostly on organic materials in western Amazonia.

Along with luminosity and lightness (flight), the quality of sharpness seems to pervade Indigenous accounts of waawî in both a material and a symbolic sense: the source materials (thorns, spines, needles, and beaks), and indeed the composite objects (whether organic or inorganic, 'natural' or 'cultural', or commercial), are sharp. Naturally, this gives the projectiles the propensity to pierce (bodies, tissues, etc.) as a primary index and effect of their agency. This may tie into wider themes of stinging, toxicity, and noxiousness as described in the ethnographic literature and sensory ecology of Makushi shamanism and related ontological concepts (see Daly 2024; Daly and Shepard 2019, 2024).

The earlier dialogue with Marvin also points to connections between waawî and the usage of tobacco (*kawai*), which resonate with the association between magical darts and ayahuasca in the western Amazon (Chaumeil 2001, 273; Whitten and Whitten 2008). According to several Makushi shamans, as relayed to Daly, tobacco is the food of the spirits, including waawî, and is blown over shamanic paraphernalia including quartz crystals, rattles, and certain bina plants during shamanic healing ceremonies. A number of Makushi interlocutors explicitly referenced blowing smoke over waawî, both during their construction and ritual use by the shaman.[19]

Almost universally among the Makushi, waawî are said to be made of stones or crystals (such as quartz or marbles) as the primary material; one local healer described them as 'shining stones'. Organic materials are secondary and often not even mentioned. An association with stones has sometimes been mentioned in the literature. For example, Daniel Cooper writes that:

> According to a highly trained and experienced Makushi *piyai'san* [shaman or piaiman], stones used for hunting are called *wrari*, while crystals used to fight enemies are known as *warwu'* [or waawî]. He explained: 'A *warwu'* is like an arrow that can kill someone. You talk to it to send it off. I have one that another *piyai*-man gave me.' When asked to reveal this stone, he sternly said: 'No. If I show you, it could make you sick or kill you'. (Cooper 2015, 181; see also Cooper 2018, 12)

Cooper goes on to explain how his Makushi interlocutor showed him other stones that had in-dwelling beings (e.g. a neutralized 'water dragon'). Similar associations have been recorded by Daly. This again points to how such objects (including waawî) can serve as embodiments of other-than-human entities. At a broader level, quartz crystals are objects of shamanic power among many societies across Amazonia. For example, among the Desana and Tukano people, as well as some other Indigenous groups in north-western Amazonia, quartz is a special object associated with potency and curing (Reichel-Dolmatoff 1979, 1997). However, its connection with other-than-human entities in the form of darts is notable among the Makushi.

It is also illuminating to consider the sensorial qualities of these spirit-darts. We were told that waawî can cause a buzzing noise or humming sound when it has been activated and deployed by a piaiman. This noise was described as being like that of a honeybee (buzz) or hummingbird (whizz or hum).[20] This is one of the few ways that waawî can be picked up by a normal person's senses and indicates that waawî is in rapid and nearby motion.[21] The noise is emitted when waawî is 'shot' by a piaiman.

Often, villagers use the term *poka* (sometimes *poksa* or *poga*) to refer to the 'shooting' or 'stabbing' associated with waawî (see Abbott 2009, 30), which is an ideophone that phonetically captures their fast, shooting character. This term can also refer to shooting an arrow or blowgun dart. However, human beings are not the only entities that can 'shoot' something like this. On the visible plane, waawî are often described as being luminous ('tiny lights', 'fires', or 'flecks'), from the point of view of the shaman.[22] This notion has been observed broadly across Amazonian shamanic traditions (see Kopenawa and Albert 2013; Viveiros de Castro 2007).

Owners and Masters

Some villagers in Yupukari describe a type of invisible pathogenic projectile that is used by entities known as 'masters' or 'owners'. Mastery and ownership are common themes across Amazonia and relate to beings that control and protect other beings (Fausto 2012b; Fernández-Llamazares and Virtanen 2020). Among the Makushi, such masters or owners are called *esa'* (esak) or *putorï* (sometimes pronounced as *padlru* in Surama) (see Butt Colson and Armellada 1990). Animals in the forest, as well as fish and other beings in rivers and lakes, are said to be controlled, led, and protected by these powerful entities (see Whitaker 2021b, 2025a). They are often described as human-like beings, but they are far more powerful than humans. As hunters, they utilize anthropogenic technologies including bows and arrows. Among the Makushi in Yupukari and Rewa, these entities are said to shoot projectiles into people's lower bodies. Concerning the effects of these projectiles, Jane indicated to Whitaker that the victim would be unable to walk and that 'your knees and ankles will swell up and give you pains' if you are shot in this way (Yupukari, 15 August 2021). Beth said that one could get an abscess from thus being shot (called poka or poksa, as with waawî) by the fish owner or master (Yupukari, 9 August 2021). Sarah described it like this:

> If you have a nice creek with rock and river and it has plenty, plenty fishes and people go and trouble them and the master will vex and that kind of thing. We take that thing as 'shoot' when the person gets sick—especially through their leg, through their knees, and get cripple like that. And that is called shoot. And the legs will get numb and unable to walk. And get numb and sit down on chair. That is called shoot. (Yupukari, 17 August 2021)

Whitaker was told that loss of sight, hearing, and/or speech could also result from being 'shot' by these other-than-human owners or masters, as well as sometimes by other 'beasts' in the forest. This term 'beast', as with other vernacular terms like *oma* ('monster' or 'dangerous being') and *jumbie* ('predatory spirit' or 'assault sorcerer'), refers here to a broad category of beings, which includes masters and owners but also other predatory beings of the forest and water (generally also non-animals) that are sometimes thought of as spirits. In general, however, it is mostly master and owner beings that are associated with shooting within this context.

Descriptions of other-than-human masters or owners shooting people with pathogenic projectiles overlap considerably with descriptions of piaimen using waawî to cause illness. In both cases, the arrows or darts are invisible and known only by their effects or the diagnosis of a piaiman. Like waawî, they often affect the lower

body—particularly the legs, knees, and ankles. These problems can only be cured by a piaiman or through taren, which refers to poetic spells or incantations (sometimes called blows, prayers, or 'high science') among the Makushi that are thought to be primarily owned and used by piaimen, as well as kanaima and local healers called taren esak.[23]

Perspectival themes sometimes emerge in relation to the use of pathogenic projectiles by other-than-human owners or masters. For example, Marvin explained that:

> They say the fish got a master or owner. The fish owner can shoot you, but with what kind of arrow we don't know. Can't see it. But the only person who could help you is the piaiman. Cause he's a kind of beast too. He can see it, but you can't see it. They got one [beast] like a sting ray. And like if you shoot it, they can't see your arrow and you can't see their arrow. It's like vice-versa or so. But they can pull you inside the water and you then see their arrow. But when they do their dirty works you don't see their arrow or vice-versa. (Yupukari, 22 August 2021)

Marvin's description of the 'arrow' of this entity is similar to Tânia Stolze Lima's (1999) account of Juruna hunting practices in Brazil involving peccaries. She describes how the perspectives of hunter (predator) and peccary (prey) form both an equivalency and a parallax. In other words, Juruna people aim to hunt the bodies of peccaries while the peccaries aim to capture the souls of hunters. This involves mutual predation, a shared perspective as 'human' beings (that is, the perspective of a subject), and a mirror-like divide between points of view.[24]

Similar to Juruna hunters, Makushi fishermen shoot at fish with arrows to collect food while the other-than-human owners shoot at the fishermen as though they were the game.[25] The divergent perspectives between hunters and prey form an opposition where the two activities are equivalent (involving mutual predation), although each side cannot see the true intentions or the instruments (in both cases conceptualized as arrows) of the other side. Perspectivism also emerged in Marvin's descriptions of other entities called 'water mamas' (or *twingram'yamu*) in terms of how they perceive underwater things, such as rocks and fish, as manufactured goods.[26] In other words, the contrastive perspectives that emerge in Makushi accounts concerning human and other-than-human beings pertain broadly to perceptions of agency, intentions, living things, and objects. Perceptions of pathogenic projectiles shot by masters and owners are part of these perspectival interactions across ontological domains. This is important in relation to why such projectiles are generally invisible to ordinary humans, since only piaimen, as 'beasts' themselves, who use specialized bodily ritual techniques (such as chanting, smoking tobacco, and consumption of other 'magical' plant substances) are able to gain the perspectives of other-than-human beings. As such, they can see pathogenic projectiles and the beings that use them from the other's point of view (see also Viveiros de Castro 1998).

Stars and Constellations

In addition to piaimen, masters, and owners, certain astral constellations are also associated with pathogenic projectiles. In Makushi cosmology and cosmogony, constellations and

certain stars are understood to be animate beings, who migrated into the night sky during the *pia'ton*, the primordial era in which various origin stories are set. In particular, both Daly and Whitaker were told by several Makushi interlocutors in Yupukari and Rewa that Orion and the Pleiades shoot arrows down from the sky that cause abscesses. In relation to this, Jane told Whitaker the following:

> So like this rainy season time there is this them stars that does come out during rainy season. In Makushi, they does call it *pebung*, and they are the ones that shoot their arrows and if you go out in the rain sometimes you get sick or sores come out through your skin. (Yupukari, 15 August 2021)

Some said that Pebung (or *pe'pîn*) (Orion) shoots the arrows (sometimes called *rupe*) while others said that it is instead Tamî'kan (*tamî'kan*, pl. *tamî'kankon*) (the seven stars or Pleiades) (see also Butt Colson 2009; Butt Colson and Armellada 2001; Whitaker 2023). Both constellations are associated with shamanism and Orion is often seen as a kind of archer among Makushi people. In addition, there have been ethnographic suggestions in relation to the neighbouring Patamona people that Orion is more broadly associated with kanaima sorcery (Whitehead 2002, 104). Concerning the Pleiades, Beth explained that:

> The Tamî'kankon when they coming out and you slip they shoot you and that is how you get abscess. That is their [Makushi] belief. That is when they throwing their arrow. Their arrow is that little fine plant and that is how we know that they throw their arrow. That is their arrow. (Yupukari, 9 August 2021)

Concerning Pebung, Jerome said that:

> Makushi people say when you sleeping they does wake up at like 3:00 AM because you have to wake up when they [the Pebung constellation is] coming up now because they coming with like arrow they have. And you could get an abscess or so. So you have to wake up early every morning—can't sleep until 5:00 [AM] or so. Because they shooting the arrow and they will shoot you. Because long, people wake up in the morning and they shoot you. (Yupukari, 19 August 2021)

Whitaker asked whether this was the same as waawî. In response, Jerome explained:

> Makushi does use the same waawî. They does fight with the same waawî. And if they want to, they will shoot you, especially piaiman. And you can't see it, but it will hurt you bad. And Makushi people will get the blow [taren] and stop it and piaiman will take it off. That is piaiman. You can't see it, but he see it.

In response to being asked whether waawî is what Pebung shoots with lightning, Jerome further explained:

> Yes, it just like that. It [is] just like Pebung's and seven stars' arrow. And you can't see it, no. When the arrow shoot you, you can't see it and an abscess [develops] in your leg or in your foot or in your back.

However, it is still somewhat unclear here whether waawî and astral arrows actually refer to the exact same thing or to different yet similar and functionally equivalent things. A contrast emerges in some descriptions of the two kinds of projectiles in Yupukari. For example, although he initially claimed not to know about the Pleiades, Marvin later stated that:

> Waawî is different, [it is] what human beings make. I saw my great grandfather and he had a rock with it around this size and he said this is pia'san arrows that they shoot with. They got powers. (Yupukari, 22 August 2021)

Stephen later suggested that astral arrows are similar to waawî, but that the effects of the different types of pathogenic projectiles are different. He explained that:

> It's similar to it. But not too dangerous like waawî, but it's still dangerous. When they [the stars] throw the arrow up and down, in our belief you can't mash that flower or you're going to get sore foot or something. So we don't let children play outside when Tamî'kan [i.e. the Pleiades] throw the arrow because it's dangerous. (Yupukari, 26 August 2021)

One of the main things that differentiates waawî from astral arrows, which apparently only pose threats during certain times of the year when the relevant stars are prominent, is this connection between the latter and certain plants. Marvin also indicated that astral arrows are associated with particular plants, which he described as pink, that come out with the Pleiades. He explained that these plants are said to be 'the Pleiades' arrows that they shoot'. Stephen similarly described this plant as a 'little red flower' with a red stem that comes up around June in the rainy season. This connection with a seasonal plant differentiates astral arrows from the waawî of piaimen. We also did not encounter associations between astral arrows and death in contrast with waawî. In general, although some villagers suggested that waawî and astral arrows are the same or similar, some very knowledgeable interlocutors indicated that they are separate things. Overall, there were conflicting reports among local Makushi people in relation to whether or not these projectiles are the same thing.

The ethnobotany of savannah grasses is revealing in relation to such arrows. For example, one species of yellow savannah grass known as 'seven stars arrow' (*tamî'kan ye'*) grows after the rains, which are said to be caused by the rising of the Pleiades (tamî'kan) in the night sky. The rain is said to be arrows (rupe, pîrîu) coming down from the constellation, which then sprout as shoots of grass. Likewise, another savannah grass—'mosquito arrow' (so-called because it grows during the mosquito [i.e. rainy] season)—is said to pierce the feet of unsuspecting people with its pointed black arrow-like shoots, causing swelling and sickness. Ill-intentioned individuals can use this grass to curse their enemies, by 'shooting tiny arrows' into their bodies. Overall, there appears to be a connection between astral movements, the ecology of savannah grasses, and the association of these grasses with arrow-like projectiles which can cause illness in human beings.[27]

The presence of invisible pathogenic darts and arrows in relation to constellations, meteorology, and cosmological phenomena, as well as their uses by other-than-human master and owner spirits and monstrous beings in the rivers and forests, suggests a wider ecology of dart-like projectiles circulating throughout the multi-tiered shamanic cosmos. These projectiles, which have an equivocal existence as subjective objects and embodied spiritual entities, cause illness and harm outside the strictly human domain.

Discussion

Despite being recurrently mentioned in regional ethnographies, the topic of pathogenic magical projectiles remains underexamined within the folklore and ethnology of lowland South America. Varied ethnographic descriptions of such objects have been made by anthropologists among regional Indigenous groups, but, as noted, there is a need for focused case studies across the region on this topic (but see Chaumeil 2001). Conceptualizations concerning such objects are often highly pertinent to Indigenous understandings of disease, illness, and pathogenesis. As animate entities controlled by human and other-than-human beings, these are subjective objects that blur the dualities of material/immaterial and body/spirit.

According to Makushi villagers in Rewa, Surama, and Yupukari, magical projectiles are variously 'shot' by piaimen, other-than-human masters and owners, and astral beings. These projectiles are similarly sent into human bodies to cause pain, illness, and/or death. Of the three types of projectiles discussed herein, shamanic waawî is the only one directly controlled by humans and often thought to sometimes cause death. Descriptions of waawî resonate with the historical production and use of curare among Makushi people while also creating some equivalency between shamans and masters and owners (see also Crépeau 2008).[28] Historical accounts depict Makushi curare (known as wourali in the past) as being extraordinarily powerful, and locally associated with the secretive rituals through which it was made (see Butt 1961, 157; Schomburgk 1841, 414–16; Waterton 1973, 31 and 210; Whitaker 2016b). Magical darts (waawî) made by Makushi shamans today are also seen as being uniquely powerful weapons. However, unlike conceptualizations of magical projectiles in western Amazonia, waawî seems to be separate from the shaman's body and more often identified with inorganic rather than organic composite materials. Nevertheless, similar to western Amazonia, it is anthropogenically produced using ordinary objects and materials within the landscape and is described as an animate being that can be directed through verbal commands.

Unstable and always in flux, waawî seem to exist between categories. They are simultaneously objects, instruments, weapons, spirits, and subjective beings. They also exist in ways blurring both material states (e.g. solid objects, smoke, and light) and immaterial states (e.g. visible and invisible entities). This challenges familiar dualisms between object and subject, body and soul, material and spiritual, and, ultimately, nature and culture. Furthermore, rather than being singular and indivisible entities, they are often described as being constituted of different parts. They emerge as something like a chimera made of crystal or marble with beaks, feathers, and smoke. In other words, they constitute composites, assemblages, or multiplicities of being. As such, it may be productive to think of them as dividual beings[29] (*sensu* Strathern 1988), as opposed to individual objects or materials. Our ethnographic accounts of shamanic spirit-darts provide a unique contribution to wider anthropological theorizations and folklore concerning animism and perspectivism, as well as to broader questions concerning life and materiality in lowland South America.

Notes

[1] We use the term 'magical' to refer to things and practices that go beyond the everyday causalities and common conditions of physical life. The term is used provisionally, since it implicitly relies upon a problematic separation of nature and culture. In general terms, the concept of magic implies something beyond the ordinary. However, for many Indigenous people in Amazonia (including the Makushi) nature and culture are not separated (see Whitaker 2021b; Descola 2013). Thus, supernature and the supernatural are not often salient concepts in the region. Although there is insufficient space to expound upon the concept of magic, we want to clarify that we use the term heuristically here, rather than analytically or ethnographically.

[2] The concept of metapersons refers to supernatural beings that have asymmetrical relations with humans (Sahlins 2022). However, rather than necessarily being gods, they are more ordinary (yet enchanted) beings that play roles in everyday life.

[3] All italicized terms within this paragraph are in Makushi.

[4] We would like to thank Natalia Buitron for highlighting the ambivalence that is inherent in traditional shamanic practices and knowledge.

[5] A shaman is called a pia'san in the Makushi language and a *piaiman* in Guyanese Creole. Waawî is also used by 'blow-people', which can refer to practitioners of a broad form of spell-work called *taren* but also to a particular type of sorcerer (Daly 2015, 280). Taren can be used for healing or to perform magical assaults.

[6] All names contained herein are pseudonyms.

[7] For more on kanaima, see Amaral (2024), Janik (2018), Lewy (2011, 2012, 2018, 2025), Whitaker (2017, 2025b), Whitehead (2001, 2002), Whitaker, Lewy, and Janik (2025), and Whitehead and Wright (2004).

[8] We use the expression 'lived folklore' to indicate that these are ongoing realities for Makushi people and not merely beliefs or stories associated with the past. In this sense, the magical projectiles are part of day-to-day life.

[9] 'Perspectives' in this context refer to orientations and deictic reference points associated with particular kinds of bodies; for example, a jaguar body and a human body have divergent appetites, dispositions, and broader relations to things in the world (see Viveiros de Castro 1998; Lima 1999).

[10] Most Makushi people in Guyana speak a form of Guyanese Creole. The quotations from interviews have been lightly edited in brackets here for readers unfamiliar with this language.

[11] Female shamans are sometimes referred to by Makushi people as *piailadies* to differentiate them from piaimen.

[12] Writing of the Kapon, Butt Colson and Armellada describe: '[t]he *kachiwoto* is a very small gourd, used to hold medicines and charm infusions. His spirit assistants, *yachiton,* would be his spirit stones, which are small pebbles and quartz crystals believed to embody the spirits of animals, plants, illnesses, and other phenomena under the shaman's control' (Butt Colson and Armellada 1990, 41, n.47).

[13] Like many Indigenous people in Amazonia, the Makushi are historically ontological animists, which means that they generally understand human and other-than-human beings to have similar subjectivities but divergent physicalities (see Descola 2013). In other words, animals might be expected to talk, have culture, and engage in social relationships similar to humans, but other-than-humans would be understood as separate from humans based on bodily differences. In contrast, ontological naturalism, which is foundational to Western science, views the physical world as shared and the subjective world as different. In other words, humans and other-than-humans are made of similar materials (e.g. DNA, cells, etc.), but the minds of humans and other-than-humans diverge. For more on how these ontologies are changing among the Makushi, see Whitaker (2021b).

[14] In western Amazonia, shamanic projectiles (*virote*) are often described as being stored in the throats or stomachs of shamans within phlegm (Beyer 2009; Harner 1972). They are regurgitated during

shamanic practices in order to be used or transferred to other shamans. In contrast, Makushi descriptions generally highlight external rather than internal forms of storage. This is a notable difference between the Guianas and western Amazonia in relation to shamanic darts.

[15] It is important to note here that 'objects' in Amazonia can be animate beings. This points again to the lack of a nature/culture division among many Indigenous people in Amazonia. The ambiguity of waawî as potentially being both physical and spiritual resonates with the similar ambiguity of some incantations in lowland South America.

[16] Among the Makushi in Guyana, *obeah* can refer to several African-derived practices of healing and magic. There is often some degree of syncretism in local practices of shamanism and obeah.

[17] During the nineteenth century, curare poison was sometimes regionally known as *wourali*, which might possibly have some connection to the term waawî.

[18] Robin Wright also describes the use of palm spines as shamanic darts among the Arawakan-speaking peoples of north-west Amazonia—this time, the moriche palm (known as the ité palm in Guyana): 'The moriche palm tree is a source of both poisonous shamanic darts (*walama*) and fibre/"hair" that produces severe pain. The ball of hair is the "fur" of *Kuwai,* or *manhene*—poison, sorcery' (Wright 2018, 144 n.13).

[19] Daly writes that: 'Traditionally, the shaman would have had a toolkit of paraphernalia consisting of a rattle (*marraka*) filled with seeds or quartz crystals, a stool carved with geometric animal designs, and a *pegall* basket containing tobacco cigars, bina plants, tree resins, and *waawî* spirit darts' (Daly 2015, 287; see also Brett 1853, 285-86; Roth 1915, 329; Schomburgk 1922, 329–31). Also, 'according to Gillin (1936, 147), for the Barama River Caribs, the pieces of quartz "represent certain classes of spirits"' (Daly 2015, 287).

[20] As iridescent entities which fly and flit around at high speed, there is a clear association between spirit-darts and hummingbirds, which are also important shamanic familiar spirits. Additionally, the morphology of waawî overlaps with that of hummingbirds, in particular, the inclusion of a sharp beak and feathered wings.

[21] Some European folklore narratives similarly describe people hearing 'elf darts whizzing past' (Dowd 2019, 20).

[22] Although our Makushi interlocutors did not specifically draw a connection to starlight in relation to the visible dimensions of such projectiles, we suspect that their luminous qualities, crystalline nature, and associations with particular constellations may point to a broader association with twinkling starlight.

[23] There are some younger people who own or know taren, but it is said to be more common among older people.

[24] This is similar to Viveiros de Castro's (1998) 'multinaturalist' descriptions of differently embodied beings perceiving the same referents in terms of different things in the world. For more on such perspectivism between humans and animals, see Fausto (2007, 2012a), Lima (1999), and Viveiros de Castro (2015). See also Whitaker (2015).

[25] Fishing among the Makushi often involves using a bow and arrow to shoot fish in the water.

[26] Although without the focus on pathogenic projectiles, such perspectivism has previously been described in *Folklore* in relation to 'water mamas' (see Whitaker 2020).

[27] The economically important species of arrow grass (*Gynerium sagittatum*), canes of which are used to make arrow shafts, is also associated with invisible arrow-like entities which can cause damage to human bodies (in this case, the eyes). As Marcus, a local fisherman from Yupukari, explained, 'They say if you plant it, it can make you blind—as if the shoots are shooting into your eyes. So you must plant behind your back, when you're not looking—so it can't affect your eyes. Or you must get an old person to plant it for you, since they are already going blind' (interview, Yupukari, December 2012).

[28] It is important to highlight here that shamans are often thought of as other-than-human beings among the Makushi and are often seen as transformational and composite beings.

[29] Dividuality refers to a form of beinghood in which a person's or entity's constitution, composition, and/or identity is defined within the context of its relations with other beings (see Strathern 1988).

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