Relational epistemology and Amazonian land-based education : Learning the ideas of intra-dependency in the Central Purus River

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Relational Epistemology and Amazonian Land-based Education: Learning the Ideas of Intra-dependency in the Central Purus River

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This article discusses relational land-based education in the Brazilian Amazon and the idea of intra-dependency. The data produced with the Apurinã presents the intra-relational spaces of knowing created between different beings, human and other-than-human, which contrast with the notion of individual learners. Apurinã co-existence in learning also sheds light on the emotional dimension of Amazonian relational epistemology, while its inclusion of human–environment relations can contribute to taking seriously the practice of care toward other-than-human beings. [Amazonia, fractal beings, intra-dependency, land-based education, relational epistemology]

Introduction

The Apurinã, who inhabit the Central Purus River region of the Amazon Basin, are motivated from an early age to be constantly aware of other-than-human actors, such as specific trees, and to consider them in relation to other entities. The Apurinã maintain collective land ownership, but diverse nonhuman "owners" (*awĩte*) are also embedded in their territory and feature in their land-based teaching. Many Indigenous scholars of education in diverse geographical locations have argued that knowing is relational in their societies, that is, it is shaped in relation to other people, actors, places, land, and the self (Balto 2005; Battiste and Henderson 2012[2000]; Cajete 2000; Kovach 2009; Krenak 2019; Meyer 2001; Santos 2013). In this article, I will discuss how relational ways of knowing are framed from the Amazonian educational perspective, and examine its key teaching methods.

In Brazil, there are 305 different Indigenous nations, most of them in the Amazon region.[1] Today, national laws and legal frameworks guarantee their right to education in their own language and in their own cultural frameworks, but Indigenous spokespeople and political organizations have been vocal in pointing out the inadequate implementation of the rulings in both villages and cities. On Apurinã lands, as in many others Indigenous societies, the dominant society's long-term assimilation practices – particularly the school system's focus on teaching new skills needed by the state – still impact the intergenerational transmission of local knowledge and native languages. In the past, Indigenous people were often relocated from their ancestral lands to missionary stations or other distant places, while the first schools were often established by missionaries or state officials, both of which were key practices of assimilation (Santos 2013; Virtanen and Apurinã 2019). Nowadays, however, it is acknowledged that Indigenous territories in the Amazon significantly contribute to global carbon stocks and cycles, as well as hosting considerable rich biodiversity (Carneiro da Cunha et al. 2021)[2]; it is, therefore, increasingly important to shed light on the informal schooling of Amazonian Indigenous peoples, and the contributions it makes in relation to environmental sustainability, which this article does by examining its workings on Apurinã lands in the Purus River Basin.

The total Apurinã population is approximately 10,000, most of whom live in the State of Amazonas in southwestern Amazonia, the region currently facing rapid environmental destruction by the dominant society. The Apurinã territories have their own state-built schools, modeled on those of the dominant society, where elementary levels are largely taught following the national curricula, despite their being identified as Indigenous schools. The teachers are mostly Apurinã, but only small number of them speak the language fluently, and there are also some non-Apurinã teachers. Like many Indigenous societies globally, they have also continued their own land-based educational practices (e.g., Tom et al. 2019), although they are rarely effectively incorporated into school-based pedagogical practices.

In the Amazonian context, previous anthropological studies have shed light on material and immaterial means of producing knowledge, including its remaking of the material body of the learner (McCallum 1996), its appearance in visions, dreams, and songs (e.g., Chaumeil 1983), through travel (e.g., Carneiro da Cunha 1998; Virtanen 2012), and in modern schools (e.g., Tassinari and Cohn 2009). Amazonian Indigenous processes of learning make it apparent that the fabrication of knowledges also occurs via different social circulations and interactions with new places and actors. Consequently, here I explore how Apurinã relational education develops in learning contexts beyond the school classroom. How is relationality between beings learned and experienced?

This study empirically shows that Apurinã land-based education introduces children to the idea that entities in the world are not only relational, but depend on each other, and thus are intra-dependent. Intra-dependency can be understood in the context of relational ontology as existence made by intra-relations, intra-actions, becoming with others, and intersubjectivity (e.g., Barad 2007; Haraway 2003; Strathern 1998; Toren 2011; Turner 1995). Embedded in intra-dependency is the idea of being controlled and cared for by owners (*awĩte*) of several kinds,[3] nonhuman and human, which involves the dimension of emotions such as respect and fear, culminating in reflexivity, all taught from a young age. The Apurinã case draws attention to co-existences at the core of relational epistemologies and land-based education, unlike the Western model of contextual communities of individual learners.

Methods

I have collaborated with the Arawak-speaking Apurinã in Brazil for almost two decades, visiting, living, and conversing with many Apurinã people of different ages from territories including Acimã, Apurinã km-124 BR-317, Boca do Acre, Camicuã, Itixi Mitari, Peneri, and Tumiã. My notes are the product of long-term ethnography, co-living, conversational interviews with the Apurinã, and the visual documentation of videos and photographs, and integrate their methods of knowledge production: co-producing diverse understandings gained in the course of participant observation, moving through the lands and along rivers, and learning through visualizations and sounds.

In this article my principal data were produced with 12 adults and 25 children and youths from the Tumiã Indigenous reserve on the Tumiã tributary of the Central Purus River, where I carried out fieldwork over several periods between 2013 and 2017. The reserve, which belongs to the municipality of Lábrea, is one of the most distant of Apurinã territories from urban areas (3–5 days' boat travel). Subsistence strategies are largely sufficient in terms of meeting basic needs, yet manufactured commodities, tools, and products are seasonally purchased when collecting state benefits or selling Brazil nuts or craftwork to buyers. Apurinã is still spoken as the first language on the reserve, and I have communicated with young

people, adults, elders, and other knowledge-holders in both Apurinã and Portuguese. In this demarcated territory, I mostly stayed in the Kanakuri settlement, spending shorter periods in the smaller extended family settlements which have relocated along the river over the years.

My positionality as a researcher is shaped by my own cultural background, previous experiences, and disciplinary training. I have aimed to engage with local communities during several research phases and to incorporate local cultural protocols into the research, building on responsible, reciprocal, and respectful research relations that are relevant to the participants (see e.g., Kovach 2009; Smith 1999). I am a non-Indigenous person, originally from a forested region with numerous lakes and rivers in Northern Europe, and in my work I have aimed at advancing diverse research interests: scientific, Indigenous, and my own (see Virtanen 2021). My experience of Amazonian Indigenous learning and schooling has also been shaped by my work and long-term contacts with the Manxineru (Manchineri) and Huni Kuin (Kaxinawá) in the neighboring state of Acre, and my previous research interests have included notions of biocultural landscapes, human–environment relationality, mobility, oral histories, and Apurinã school history. All this has given me a relatively broad understanding of Amazonian Indigenous education and schooling.

Furthermore, my experiences have shown that there is no universal understanding of sustainability. As I have discussed elsewhere, Indigenous ideas of sustainability can differ from dominant views of it, and are strongly expressed in values such as sustaining healthy relations between different kinds of beings (Virtanen et al. 2020), a realization that has motivated me to look at the processes of learning relationality in more detail. With this present work, I hope to contribute to discussions that can lead to creating better educational policies as well as to global debates on epistemic inequalities. Epistemological injustice rooted in the Greco-Latin tradition, authority, and power structures has not only controlled local forms of education and science, but also produced racial hierarchies and inequitable economic practices, among other things (e.g., Grande 2004; Mihesuah and Wilson 2004; Rivera Cusicanqui 2012; Walsh 2005). Shedding light on Amazonian land-based education can contribute to learning about and potentially incorporating more sustainable human–environment entanglements.

Relational Epistemologies and Land-based Education

Relational approaches to knowing have been discussed in diverse fields (Ingold 2000; Toren 2009, 2011). As Battiste and Henderson (2012[2000]) have noted, Indigenous knowledge emphasizes that things in an ecosystem are dependent on each other, and this idea is prominent in my study. Meyer (2001) has shown that, in Hawaii, knowledge is about dialog between people and with the land.[4] Indigenous education is thus place-based and land-based, and emphasizes the role of place in the land in learning about the relations between different life forms and contextualizing traditions, stories, languages, and diverse temporal situations (see e.g., Michell et al. 2008; Pugh et al. 2019; Styres 2011; Tuck et al. 2014; Wildcat et al. 2014). These models have proved successful in teaching traditional ecological knowledge, communal values, health and well-being, as well as promoting resilience and sustainability (e.g., Corntassel and Hardbarger 2019). Meanwhile, some environmental and ecological education approaches have also been developed for Western schooling systems as interactions with places and beings (e.g., Gruenewald and Smith 2008; Judson 2010; Smith and Williams 2015), but they rarely considered them as relational entities.

Indigenous education has highlighted the processes of learning about relationships in the cosmos and gaining understanding of all its beings as crucial actors. Drawing from relational epistemologies, these models can be understood in the context of relational ontologies, a specific theory of being that draws on relationality and co-existence (see e.g.,

Bird-David 1999; de la Cadena 2015). In this onto-epistemological context, Gregory Cajete (2000, 2005), a Tewa North American educator, emphasizes interdependency on the one hand, and the reciprocal nature of knowledge-making and the experimental process of understanding on the other. Kyle Whyte (2018, 127) has also written about interdependence and notes, "The concept of interdependence includes a sense of identity associated with the environment and a sense of responsibility to care for the environment." This idea is important for relational self-making. As Meyer (2001, 135) has explained in the context of Hawaiian relational epistemology, "The practice of interdependence was not at the loss of one's self or individuality."

Although the idea of interdependency could be used to describe Amazonian education, Apurinã socio-philosophies can be better understood as intra-dependency relations, as beings are not pre-existing individual subjects but, rather, fractal and made in relations; in other words, a person is not self-sufficient, but also made by others (see also Santos-Granero 2012; Uzendoski 2010; Vilaça 2005). Intra-dependency occurs between beings which are made, emerge, and come to exist in relations (Turner 1995; Viveiros de Castro 2012). Similarities and differences make relational entities exist materially and socially within connections (Strathern 1998, 2020; Haraway 2003), creating intra-dependencies; beyond humans, this is also evidenced in relations between humans and master and owner beings (cf. Fausto 2000; Fernández-Llamazares and Virtanen 2020). Furthermore, while this inseparability of beings provides an account of entanglements and embeddedness, it also affects the ways learning takes place between certain entities. In this article, intra-relations refer to the relationality of clusters of beings – humans and other-than-humans – and specific human learners created within relations with other actors. I also draw the idea of intra-dependency from new materialist approaches and what Karen Barad (2007, 141, 180) has called intra-actions, which are material-cultural processes that make and exercise agency.

In Amazonian relational epistemologies, different learners, their relations, and their inner spaces and reflexivity are considered. Knowing is embodied at various levels. Among other things, Indigenous education scholars have highlighted the importance of "nourishing the learning spirit" as well as emotional and spiritual development in education (Battiste 2013; Michell et al. 2008). In the Central Purus Apurinã communities, knowing requires self-awareness and is affected by the learner's relations with the other composited beings, which can change according to the capacities of learners and their situations, addressed in the next section.

Apurinã Children as Relational Learners

In the Tumiã territory, several protective rites are performed for babies and children in order to make them healthy, integrate them into intimate family and community relations, and gradually introduce them to a number of other-than-humans, animals, plants, and master spirits (*awĩte*). Apurinã ontology and biopolitics, which can be described as practice aimed at achieving certain kinds of mindful bodies (Vilaça 2005) or regulating them, are based on the construction of healthy and balanced relations between entities. For example, certain sacred trees that are regarded as persons are both cared for and feared. As with game animals, birds, fish, rivers, and many other animated agencies, they have *awĩte*, master spirits, which are considered to affect the Apurinã; this may happen even before birth if expectant parents move about in their vicinity or hurt them. Fathers should not cut down powerful trees or harm certain snakes, as that affects the fetus and the formation of its body in relation to others.

Indeed, when a woman is pregnant, both parents' activities must be controlled in order to construct balanced relations between humans and other-than-humans. Typical of many Amazonian peoples, this produces the personhood of children through their bodies, as discussed in anthropological approaches (Turner 1995; Vilaça 2005; Virtanen 2012, 2015).

After the birth, the process of establishing these relations continues in order to make the Apurinã baby a "real human," Pupỹkary. Parents protect their babies and small children, who are still forming their relationality with the world, with diverse material substances, aiming to avoid destructive relations with other beings. These substances include various herbs and other plants which are taken in baths, inhaled, rubbed on the skin, and ingested as liquids, as the plant subjectivities enable the baby to grow up with respect for other-than-human entities. Certain fish, game, and trees, among specific other-than-human agents, are regarded as having personhood, as discussed in Amazonian Indigenous socio-philosophies (e.g., Descola 2005; Fausto, 2008; Viveiros de Castro, 2004, 2012), and they too affect the formation of integrity in children. The preferred relations between beings are also expressed in Amazonian art, which can affect people and their agency, and enhance the formation of new relations.

For the Apurinã, the protection of children is especially required when moving through the lands of unfamiliar other-than-human beings. Prior to a journey by land or water with a baby, a mother can look for a certain protective herb that gives off a certain smell and acts as a type of protective clothing, and rub it into the baby's skin or make the baby step on it. When setting off on a journey from their territory, situated a four-day boat trip along the Tumiã River from the closest urban area (Lábrea or Pauini), specific protection techniques are required. A small boat from a piece of bark or leaf is prepared and placed in the river so the baby's spirit (*isanỹkate*) will travel well. Other rites to protect the baby include sprinkling the mother's breast milk onto the river. This limits the baby's overly close and thus fatal relatedness to foreign other-than-human subjectivities along the way, but also prevents the new person from unsettling the forest entities. If the baby is born in a city, balanced land-based relations are ensured by presenting the baby with something from the land where s/he was born. This can be done by giving the baby mud from the riverbank of the city to make her feel safe. Should this not happen, bodily illnesses would follow; only shamans (*mỹỹty*) can heal these by removing the effects of foreign entities and the destructive relations they establish (see Virtanen 2015).

At the core of these thoughts and actions is the formation of relational subjectivities, which counter the Western notion of individuals; rather, what we have here are fractal dividuals made in partial relations, as described in other Amazonian (e.g., Santos-Granero 2006, 2012; Turner 1995; Vilaça 2005), and Melanesian contexts (e.g., Strathern 1998, 1991[2004]; Wagner 1991). Consequently, a child as a mindful subject is typically a temporal result of contacts with other subjectivities, and even of the absence of harmful beings with whom contacts have not been realized. When illness strikes, therefore, the Apurinã invest considerable time in trying to identify what could have caused unbalanced relations between the beings.

When a parent enters the forest location of familiar other-than-human beings accompanied by a new baby, these beings must be informed about the newcomer. The forest subjectivities will not then regard the baby as a stranger. At the same time, this type of communication with other-than-human beings is learned by older siblings or other children who are also accompanying the parents. This explicit acknowledgment of forest

beings teaches young people about other presences, both visible and invisible, and their careful consideration and interactive relations. Thus, from an early age, the Apurinã learn to reflect on their movement in relation to other subjectivities, choose paths that do not unbalance other-than-human agencies in the forest, and address various presences in the lands they inhabit.

Apurinã parents and elders bring children gradually into social relations with other-than-human beings, and introduce any unknown human being to them. Much as Elizabeth Povinelli (1995, 514) has shown for the Belyuen Aborigines, pointing out the familiar sounds and smells of local humans pleases and calms the beings in the land, which then give the humans resources and knowledge. In Amazonia, moving through the land is crucial to the process of becoming a good learner and thus to knowledge production, as movement also creates attachments to the beings in the lands. Relational learning in turn enhances some of the relations in the Central Purus that are known as beneficial for certain types of knowledge, while limiting others. These aspects impact each learner differently due to their individual qualities, and therefore each child requires different support, not only from humans, but also from other-than-human beings that might be invisible and require specific means of communication. Furthermore, the diversity of plants enhances various personal qualities, such as being a quick learner, a resilient worker with a strong body, a good negotiator with animal subjectivities, or a good articulator. Thus, formal and informal education are part of the same processes (see also Brayboy and Castagno 2008; Sumida Huaman and Valdiviezo 2014), and, in fact, the medicinal plants also enhance better learning in state-school setting, being a complementary part of it.

Cajete (2005) and Williamson and Kirmayer (2010), among others, have underlined that children are differently gifted; similarly, individual differences in children are observed and discussed collectively among the Apurinã, and medicinal plants are assigned according to individual needs. In the case of the Apurinã, teaching is also about locating each child as a learner in relation to the human and other-than-human subjects of their community in terms of their differences. It is the duty of parents and elders to ensure that small children develop without negative impacts from other-than-human subjectivities; by their own acts, parents teach children how to relate to the beings on which the community depends, and also ensure their access to experiences of collective intra-relations learning.

Intra-relations of Learning

Relational learning in Apurinã society is largely family and community-based, but it also occurs in diverse intra-relations among settlement dwellers, as well as being age- and gender-based. Apurinã of different ages learn in diverse spaces through discursive subject-to-subject relations with other-than-human actors and members of the community of learners. Among other sources, relational learning draws from different experiences of relating with other-than-humans while moving in the forest and along rivers and streams, carrying out various tasks, or staying in villages. The shared treks teach children how to address other-than-humans, and also the signs –such as bird calls and meaningful variations in their intensity, pitch, and tempo – which require response and action. Among Tumiã dwellers, daily practices are typically dictated by early morning hunting, work in the gardens, or school hours and, in the afternoons, by gathering fruits or other resources in the forest, household work, cooking, craftwork, or visiting kin. Despite school classes, activities are dictated by the land and its conditions and

actors, all of which are constantly matters of reflection and sensing, which I address in later sections.

Learning from the land is guided by adults and elders, but it also occurs in child–child, or even child–adult relations, as evidenced in numerous forest treks. Exemplifying the latter two forms is a short trek I took with a group of my young Apurinã friends, aged 5 to 13, in March 2017. We left the Patakyã settlement and headed to the swidden cultivation of one of the children's parents about half an hour from the riverbank. The children walked quickly along a narrow path through forest rich in vegetation, occasionally balancing across fallen tree-trunk bridges over small tributaries. As we went, they observed the heights and the undergrowth, and paid attention to the sounds and movements of the forest, the animals, winds, and the falling of any vegetation. There was considerable and constant laughter and chatter, with all the children and adolescents participating in conversations about which path to take at the crossroads and what they could see, hear, and observe. On this trek alone, the children easily identified almost 40 edible species, and all shared what was collected, eating ripe fruits, seeds, nuts, and edible worms from the trunks of fallen palm trees, and stopping to drink in clear tributaries on our way. One of the oldest cleared the forest and led the trek, but the younger children's observations were also listened to carefully. The videos I produced from this trek show the children pointing to different plants and animals and explaining what they are observing or sensing.

The walks with the children, like this one, were different from those I often took with elders, as the children maintained constant horizontal negotiation over each other's remarks. The elders, on the other hand, usually told the younger learners the names of plants and explained what they could be used for, such as for food or healing – a unidirectional transfer of knowledge. Yet, although cared for and guided by adults and elders, my walks with young people demonstrated that Apurinã children also learn significantly from their peers, with each learner contributing with their own capacities and skills. When my treks included their parents or elders, the younger ones rarely spoke much; rather, they posed questions, and mostly listened to the responses with respect, repeating the species names they were told. Then the children could also report what they heard, such as the sounds of animals, as any adult or young Apurinã friends of mine would do during our walks in the forest and travels, by talking about or just pointing to the sound or movement.

For me, experimental co-learning was one vital way of gaining information on the flora and fauna needed for the Apurinã-language school material I was preparing with my Brazilian linguist colleague and the Apurinã community, as many plants have several wild, semi-domesticated, and domesticated versions, and my own vocabulary for them and their variations was limited.[5] I had to see, touch, feel, smell, and then repeat the names of the different species to which my Apurinã friends and hosts tirelessly wanted to introduce me. Without their guidance, I would not have known what to perceive. Meanwhile, I felt that our learning experiences were reciprocal, as I was recognized as someone contributing to the community with my knowledge of writing Apurinã languages and preparing documentation for the state agency of Indigenous affairs. As a learner I was also identified by ways of being, my Apurinã naming which connected me to the Meetymanety moiety, and my created relations in the community.

Apurinã knowing emphasizes the importance of both personal and shared experiences of knowing within the collectives and their intra-relations of different kinds. Despite the learners' skills and knowledge gained, the participants in communal

festivities (*kỹỹnyry*) are introduced to diverse entities, including the master spirits called, and enter into relations with them by their songs and dances In consequence, during these rituals children learn about the presence and importance of certain other-than-humans in the Apurinã's present and past through the singing, dancing, and bodily movements whereby the invisible world is addressed collectively, They take the dance steps from their elders but also move their bodies with their peers. Food and drinks are enjoyed together, while people's movements, plant substances, such as moriche palm leaves (*kinhary*), a central semi-domesticated species which is carried in the ritual, and speaking and singing in pre-ritual, ritual, and post-ritual activities open a way to experience the world of other beings relationally and demonstrate how the nonhuman entities are addressed when inviting them and distanced by the acts of expressing farewell.

In sum, the two previous sections have shed light on relational epistemologies, meanwhile demonstrating ontologically that, for the Apurinã, producing knowledge is about fractal and relational entities (Haraway 2003; Uzendoski 2010), and their knowing *within* relations, not only knowing *about* relations (Cajete 2005). Entering into relations increases or decreases the co-existing energy and quality of beings, and crucially teaches about intra-dependency, which is discussed in the next section.

Intra-dependency, Emotions, and Reflexivity

The idea that the certain beings are intra-dependent is embedded in Apurinã land-based learning: that is, the beings are not pre-existing, but emerge within relations. The invisible presence of the *awĩte* master spirits is indicated to the younger ones in places associated with specific plant and animal species or other other-than-human beings along the paths that lead to forest resources, lakes, and other parts of the riverbank. All these subjectivities (Descola 2005; Viveiros de Castro 1996) have their chief spirits, which limit but also feed, heal, and empower the Apurinã.

Apurinã children learn to respect and act in relation to the invisible other-than-human world in various daily activities, when leaving the village center to go fishing, and when the men go out hunting and gardening and the women gather manioc and other forest resources. Water, plant, fish, and game *awĩte* cannot be ignored, as they are thought to show the way to places where there are forest resources if humans respect and know how to negotiate with them, leading hunters to groups of game animals, and providing fish and plants for food (Virtanen 2015). Fausto (2000) has noticed a typical social structure among a number of Indigenous peoples in the Amazon which he describes as familiarizing predation. He shows how through warfare, shamanism, or dreaming, beings appropriate the other's capacities but never fully become the other or the same. Master spirits are part of the same logic in which the other enables vital actions in relation to health and natural resources, although the spirits can also afflict a person or cause suffering. It is also the same kind of relationship that Apurinã leaders have with their people, and it educates children about relations involving reciprocity, respect, responsibility, and care that also leave space for autonomy.

A sense of mutual nurturing is embedded in the Apurinã idea of intra-dependency, which also marks the limits of one's actions. Master spirits are seen to have an effect on people, which can include illness or misfortune if one attracts forest subjectivities with the goal of overexploitation or purely personal benefit. Unsustainability is even considered to cause health issues by destroying the state of balance in the mindful body. Over the years, I have heard several narrations of how master spirits caused, or can

cause pain, illnesses, and exclusion from social relations. Furthermore, even moments of fright caused by diverse actors, human or other-than-human, are reasons for illness among the Apurinã, especially among babies and children, and a common view in Amazonia. In fact, becoming familiar with intra-dependency relations often involves unpleasant experiences of reflecting fearfully on one's presence in the territories of powerful other-than-human actors, and communal stories describe how master spirits can affect people's mindful bodies. These negative emotions also include the fear of disturbing or encroaching on the places of owner agencies (*awĩte)*, whose presence is not necessarily visible.

Being reflexive and cautious about the impact of one's actions on the web of relations is part of Apurinã self-reflection, as has been noted of land-based education more generally (see also Styres 2011), and this includes diverse embodied emotions. Forming relations is, in fact, also about forming a body which enables knowing how to relate to other agencies responsibly, respectfully, and with care. This requires knowing oneself, gaining selfhood, and becoming independent (see also Balto 2005 on the North Sámi). In the Amazon, that stance requires being well-related to other beings. Thus, the term "independent" has to be understood in a relational context, as independent actors are those who have learnt how to act with others. Apurinã youth learn to develop their own personal abilities relation-ally, controlling their own acts to avoid reaching the limits of unsustainability. These values are deeply embedded in forms of land-based education that are based on becoming familiar with diverse other-than-human subjectivities and the resources they provide in reciprocal relations with humans.[6]

Anthropological work has discussed several communicative practices used to tame and negotiate with master spirits but, among the Apurinã, these relations are about re-spectful dialog, rather than impacting and dominating (see also Kimmerer 2013 on North America). The Apurinã's ability to enter into relations with other actors includes non-verbal and verbal communication: perceiving and sensing that situate a learner in the fluid web of relations in which beings are in constant change. Master spirits can penalize humans for their exploitative actions, and consequently relating to master beings is also about not addressing and not extracting, which, as a way of caring, differs from ignoring. Being within relations can be about feeding and caring, but also about giving space for living and protecting.

Apurinã parents teach their children not to run in the vicinity of the *awĩte* master spir-its' places, raise their voices there, or do anything that might disturb them, thus making explicit Amazonian ideas of dependency. They also teach their children how to relate with other-than-humans and how to acquire skills to address master spirits and ask them for permission to use and extract their resources. This involves specific thoughts, speaking, or singing before entering their territories, not just to tame and dominate instrumentally, but to create reciprocal subject-to-subject relations. Humans, thus, are not aiming to tame or control other-than-humans; rather, their acts and practices are based on dialogic relations and reciprocity, which guarantees the flow of forest resources and energies. By controlling movement, noise, communicative paths, and entering into relations with specific actors, their potency can be reduced or increased.

As the idea of intra-dependency is crucial both to Apurinã ways of living and to experience of the self, its importance is highlighted verbally and nonverbally. For in-stance, the personified agency of the wind is addressed when burning small forest patches in order to start planting and cultivating. The wind is called upon with the sounds of flute instruments and singing that show respect for it. All this educates

Apurinã children about humans' fragility and limits in relation to other life-form entities, showing them how to distance themselves from harmful entities and leave them in peace. Learning about the emotional side of intra-dependency relations is cultivated by continued relations with the land that also enhance attachments with it, such as interacting with the locations of certain nonhumans, cleaning and eating abundant fruit resources on the spot, or visiting family gardens. Relational learning of nurturing, on the one hand, and control on the other, is evident in Apurinã children's affections for certain places. In 2017, when we were trekking to the cultivations, my six-year-old Apurinã friend, a boy I had known since 2013, told me proudly of the banana trees he had planted in the swidden cultivation of his family. The cultivations and gardens become identified and talked about as belonging to someone, "owned" in other words, but only insofar as that person has invested time and work in them. The six-year-old was not considered an owner of the cultivation yet, but he was on the way to becoming one, and already strongly emotionally connected to his cultivation.

Keeping wild pets also teaches both dependency and care. In 2017 I talked to a young girl, raised by her grandmother in the settlement of Kanakuri, who was taking care of a small insect of the *Coleoptera* family which she had captured on a forest path. Feeding it a diet of leaves, she explained with affection that, like her earlier insect pets, this insect might follow her on her travels and visits when she left the village center. Apurinã children often keep small insects, nurturing and interacting with them, which teaches them emotionally about relations of affinity and dependency.

Similarly, young Apurinã mothers and grandmothers often have parrots or monkeys as wild pets. This form of relationship is also an expression of care even though it means that the other-than-human beings are then controlled and ruled, unlike before being captured. It is also a form of "ownership," which in the Amazonian Indigenous context is typically considered to be an expression of nurture and protection while also limiting one's actions, and therefore an ambivalent relationship (e.g., Fausto 2000). Wild pets like parrots and monkeys are rarely eaten, as through feeding and addressing they become affines (see Erikson 2000, 9). Apurinã children also learn that, in contrast, forest animals whose mothers have been killed by hunters or otherwise accidentally hurt may be captured, brought to the village, and eventually slaughtered. Despite being fed and protected to keep them alive, some animals did not enter into the intimate social relations that others did. Their future was thus established at the time of capture. In a canoe, I once held a baby tapir that hunters had spotted alone on a riverbank. It was taken to the home of one of the hunters where it could grow up, but reciprocal relationships were avoided so that it could later be eaten. Overall, Apurinã children learn that other-than-human agencies are protective and generous, and guide humans, but may also hurt and punish a person if disrespected (Virtanen 2019). Therefore, the land must be carefully listened to and observed.

Cultivating the Senses as Learning

Senses as a source of knowledge are crucial in the Central Purus, as other-than-humans are regarded as having their own knowledge that they communicate in various forms (see also Santos-Granero 2006). Birds, for instance, are considered to see further than humans, an attribute which is believed to be crucial in assisting humans to take action and make decisions. Along with specific bats and frogs, whose sounds immediately react to changes in the environment, they are carefully observed, listened to, and reflected upon. Other-than-humans are thought of as cognizers (knowers) with

different sensing and knowing capabilities. Accessing their knowledge, therefore, is largely about co-sensing and co-observing, processes in which diverse subjectivities play a part; animals, for example, "tell" the listener what is occurring, thus maybe warning them or organizing subsistence practices. Through these animals, the Apurinã can know the presence of game animals (such as peccaries), impending storm or rain, if someone is coming to the village, and so forth. Animals literally "speak" to the Apurinã and are crucial in offering knowledge about relations. Someone might say, for instance, *Musa sãkirawata, kãkity ĩkapane* ("a *musa* owl is *speaking*, so people [will] come").

In communities far from urban areas and highways, such as those in the Tumiã, children learn to observe the environment and its different sounds, smells, and movements constantly. This "reading" of the land, like the Pacific Indigenous peoples' local knowledge of the ocean (Meyer 2001) or Arctic peoples' knowledge of the physicality of snow (Gaup Eira et al. 2018), reveals the changing relations in the land. The learning is place-based in the sense that it is related to previous and future Apurinã persons. It has been noted that indigenous and traditional ecological knowledges draw from the observations and experiments of certain people and can scarcely be separated from the lands and their knowledge producers (e.g., Battiste and Henderson 2012; McGregor 2004). As I have explained elsewhere (Virtanen 2015, 2019), most messenger animals are considered to be Apurinã ancestors, usually ancient shamans who have been transformed into animals after their death. The deceased shamans are thus thought to be still acting as community guides, and are considered to be Apurinã teachers, on a similar footing as human teachers. The presence and song of ancestor birds in particular generate experiences of shared history (see also Fiorini 2011).

From an early age, children also learn to pay attention to their dreams and intuitions and reflect on them as valid knowledge of the world. The developed Apurinã learner and cognizer has direct access to knowledge through a range of animal, plant, and other other-than-human actors, but always within relations. The evidential basis of Apurinã relational epistemology is largely sensory, and the sensory evidence is also gathered in bodily sensations and dreams caused by other beings or, rather, by other agents' movements and intentions. Discussing these personal reflective ways of knowing, Cajete (2005) points out that each person is at the center of a learning process. A rich local ecological knowledge of places, plants, and animals, as well as their relations, also contribute to developing Apurinã children and youths into persons.

When a person is "alone" – while moving through the land and relating to its subjectivities, for instance – other-than-human beings may affect the mindful body, causing it to produce new songs, rhythms, and visualizations such as geometric designs. These are regarded as the materialization of the knowledge of other-than-humans. The teaching can also be a realization of what the youth should do or it can produce specific qualities like strength and protection. Such knowledge is shared horizontally (cf. Hugh-Jones 1996) among the Apurinã, who also experience transformations into animals during their dreams and learn from those experiences. The path is largely open for all those who want to dedicate themselves to acquiring more knowledge about animals and plants, and/or aim at becoming a traditional healer, although it is a usually painful and lonely route. While new healing practices and missionary work has been introduced, some Apurinã, even youths, have an extraordinary capacity to relate to and learn from animals, to h, and to act as the communities' visionaries on diverse issues.

However, with dramatic environmental destruction, Apurinã land-based education in relationality is endangered even in the forested areas of the Amazon, as the alterations have already sponsored socio-political and economic changes, radically interrupting the ecosystems and disturbing lifegiving actors. Indeed, Indigenous peoples suffer the most from climate and environmental changes (Whyte 2018, 140). In recent years, state economic development mega-plans and commercial overfishing and overhunting by settlers in the proximity of some Apurinã territories have affected the availability of the necessary resources for life. According to the Apurinã, the noise of cars and chainsaws is increasingly disturbing the animals and master spirits. These sounds are especially linked with the invasion of Indigenous territories by non-Indigenous peoples who exploit the forest resources and disregard the dependency relations between humans, forest animals, and other beings.

In addition to the traditional tasks of children – becoming familiar with the clusters of knowledge embedded in the land and learning to act in intra-dependency relations – modern school education offers new information and the skills needed to relate with the dominant society (Tassinari and Cohn 2009). In recent years, many Apurinã parents have been forced to leave their territories for longer periods to find adequate state schooling for their children in urban areas, as their territories have not received basic education services, and even learning to write and read in Portuguese (as well as in the mother tongue and heritage language) remains a challenge. In urban areas, the opportunities offered by the dominant society to young Indigenous peoples require the production of new types of bodies and economic resources, the acquisition of which often comes to occupy the most significant part of Apurinã lives in cities (Virtanen 2012). Teaching sensitivity to the land and imparting ecological knowledge of biocultural places is harder to achieve in urban areas. Yet traditional ways of becoming a good learner and developing the mindful bodies of children are also a crucial part of urban schooling, with medicinal plants being used to make good learners (as noted above) by protecting children from harmful entities and strengthening them individually. The relationality with ancestral beings is regarded as remaining effective beyond physical places, actualizing relations over long distances and including urban areas and their ecological systems (see Virtanen 2019, also Whyte 2018).

Cultivating the senses occurs locally, but also takes into account large social systems and the cosmos. Consequently, Apurinã ideas of both knowledge-making and sustainability operate on the basis of a healthy dependence between certain beings which are co-existent, intra-dependent (cf. Strathern 2020), and form diverse relational micro- and macro-systems. For Amazonian Indigenous societies, in an age of environmental degradation and ever-increasing resource extraction, knowledge drawn from the land and its subjectivities still offers a sense of well-being.

Conclusion

This article has discussed the dependency and relational learning practices that are the foundations of Apurinã education. By relating with other-than-human actors in everyday mundane and ritualized spaces, Apurinã educators introduce young people to the idea of intra-dependency relations: intra-acting and learning the rules of control, affliction, and force in relation to the other life forms. This is a process that includes emotional development and growth of self-awareness and sensing in relation to others – highly valued in Apurinã relational land-based education – as social relations involve the emotions of care, respect, and even fear, which are explicitly addressed and discussed among kin.

This builds a strong base for reciprocal actions at both personal and communal levels, rather than establishing instrumental negotiations with other-than-human agencies in order to use their resources. The emotional dimension of Indigenous education has also been noted in North American Indigenous contexts (e.g. Battiste 2013; Michell et al. 2008), and in the Amazonian context is largely about the idea of being intra-dependent in the long term.

In addition to personal and communal reflexive activity with other-than-human actors who experience the world in both similar and different ways, Apurinã land-based education also encompasses diverse intra-relational groups of beings teaching each other. Scholars of education have long noted the importance of community, family, and peers in learning. This Amazonian case, however, points to the ontological constitution of learners as relational beings rather than individuals acting with each other, and thus calls for more attention to be paid to the ways learners exist and are made in relations. In Amazonia, the relationality between entities, including the entanglements between humans and other-than-humans, is considered a precondition for biopolitics and a good and healthy life.

Schooling and literacy have changed and are still changing the world, and environmental, climate, and sustainability issues are becoming more tangible and increasingly debated by researchers and education policymakers. Amazonian land-based learning practices also offer a lesson for the dominant society's education programs in developing the youngest generation's relationality to its immediate environments, in valuing and using local ecological knowledge, listening the land, and acting accordingly. Amazonian land-based education focuses on people's relational place in the world and on coping with unexpected situations, and learning about sustainability means learning about the inclusion of human–environment relationality, which explains the effectiveness of Amazonian Indigenous education in regard to sustainability issues. Its recognition by the dominant society can contribute to taking seriously the practice of care toward other life forms and entities.

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Notes

1. Numerous Indigenous groups remain in voluntary isolation.
2. See also Garnett et al. 2018; Fa et al. 2020.
3. I have unpacked the Apurinã relational notion of ownership in my previous works (Fernández-Llamazares and Virtanen 2020; Virtanen 2019), and here I want to elaborate on it from the perspective of intra-dependency.
4. Indigenous knowledges are inscribed, materialized, and expressed in biocultural landscapes, livelihoods, craftworks, language, stories, arts, governance, social organization, and ways of healing (e.g., Battiste and Henderson 2012[2000]). They include diverse cultural, ecological, spiritual, and economic aspects, and have been promoted by discussions of traditional ecological

knowledge (TEK) (e.g., Berkes 2012). Diverse forms of producing and accessing knowledge and information have also been central in the development of Indigenous research methodologies (see e.g., Chilisa 2012; Kovach 2009).

5. I had been co-organizing community workshops in order to learn how to write in Apurinã, and land-based learning was also an important method for my own language learning.

6. Here we can see that relational epistemology and ontology can hardly be separated from relational values, and thus from axiology (as often noted in the discussion on Indigenous research methodologies, see e.g., Chilisa 2012). Onto-ethico-epistemological approaches have also been introduced in other than Indigenous contexts (see e.g., Barad 2007).

References

Balto, Asta. 2005. "Traditional Sámi Child Rearing in Transitions: Shaping a New Pedagogical Platform." *Alternative: An International Journal of Indigenous Peoples* 1 (1): 85–105.

Barad, Karen. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham: Duke.

Battiste, Marie. 2013. *Decolonizing Education: Nourishing the Learning Spirit*. Saskatoon: Purich.

Battiste, Marie, and James (Sa'ke'j) Youngblood Henderson. 2012[2000]. *Protecting Indigenous Knowledge and Heritage. A Global Challenge*. Saskatoon: Purich.

Berkes, Fikret. 2012. *Sacred Ecology*. New York: Routledge.

Bird-David, Nurit. 1999. "'Animism' Revisited. Personhood, Environment, and Relational Epistemology." *Current Anthropology* 40 (S1): S67–91.

Brayboy, Bryan McKInely Jones, and Angelina E. Castagno. 2008. "How Might Native Science Inform 'Informal Science Learning'?" *Cultural Studies of Scientific Education* 3: 731–50.

Cajete, Gregory A. 2000. *Native Science: Natural Laws of Interdependence*. Santa Fe: Clear Light.

———. 2005. "American Indian Epistemologies." *New Directions for Student Services* 109: 69–78.

Carneiro da Cunha, Manuela. 1998. "Pontos de vista sobre a floresta amazônica: xamanismo e tradução." *Mana* 4 (1): 7–22.

Carneiro da Cunha, Manuela, Sônia Barbosa Magalhães, and Cristina Adams, eds. 2021. *Povos tradicionais e biodiversidade no Brasil:contribuições dos povos indígenas, quilombolas e comunidades tradicionais para a biodiversidade, políticas e ameaças*. Seção 5. São Paulo: SBPC. http://portal.sbpcnet.org.br/livro/povostradicionais5.pdf

Chaumeil, Jean-Pierre. 1983. *Voir, savoir, pouvoir. Le chamamisme chez les Yagua du Nord-Est péruvien*. Paris: Éditions de l'EHESS.

Chilisa, Bagele. 2012. *Indigenous Research Methodologies*. London: Sage.

Corntassel, Jeff, and Tiffanie Hardbarger. 2019. "Educate to Perpetuate: Land-based Pedagogies and Community Resurgence." *International Review of Education* 65: 87–116.

De la Cadena, Marisol. 2015. *Earth Beings: Ecologies of Practice across Andean Worlds*. Durham, NC: Duke University Press.

Descola, Philippe. 2005. *Par-delà nature et culture*. Paris: NRF, Gallimard.

Eira, Gaup, Inger Marie, Anders Oskal, Inger Hanssen-Bauer Inger, and Svein Disch Mathiesen. 2018. "Snow Cover and the Loss of Traditional Indigenous Knowledge." *Nature Climate Change* 8 (11): 928–31.

Erikson, Philippe. 2000. "The Social Significance of Pet-keeping Among Amazonian Indians." In *Companion Animals and Us: Exploring the Relationships Between People and Pets*, edited by A. Podberscek, E. Paul and J. Serpell, 7–26. Cambridge: Cambridge University Press.

Fa, Julia E., James E.M. Watson, Ian Leiper, Peter Potapov, Tom D. Evans, Neil D. Burgess, Zsolt Molnár, Álvaro Fernández-Llamazares, Tom Duncan, Stephanie Wang, Beau J. Austin, Harry Jonas, Cathy J. Robinson, Pernilla Malmer, Kerstin K. Zander, Micha V. Jackson, Erle Ellis, Eduardo S. Brondizio, and Stephen T. Garnett. 2020. "Importance of Indigenous Peoples' Lands for the Conservation of Intact Forest Landscapes." *Frontiers in Ecology and the Environment* 18 (3): 135–40.

Fausto, Carlos. 2000. "Of Enemies and Pets: Warfare and Shamanism in Amazonia." *American Ethnologist* 26 (4): 933–56.

———. 2008. "Too Many Owners: Mastery and Ownership in Amazonia." *Mana: Estudos de Antropologia Social* 14 (2): 329–66.

Fernández-Llamazares, Álvaro, and Pirjo Kristiina Virtanen. 2020. "Game Masters and Amazonian Indigenous Views on Sustainability." Special Issue on Indigenous Conceptualizations of "Sustainability". *Current Opinion in Environmental Sustainability* 43: 21–7.

Fiorini, Marcelo. 2011. *Desire in Music: Soul-Speaking and the Power of Secrecy. In Burst of Breath: Indigenous Ritual Wind Instruments in Lowland South America*, edited by J. Hill and J-P Chaumeil, 171-197. Lincoln: University of Nebraska Press.

Garnett, Stephen T., Neil D. Burgess, Julia E. Fa, Álvaro Fernández-Llamazares, Zsolt Molnár, Cathy J. Robinson, James E. M. Watson, Kerstin K. Zander, Beau Austin, Eduardo S. Brondizio, Neil French Collier, Tom Duncan, Erle Ellis, Hayley Geyle, Micha V. Jackson, Harry Jonas, Pernilla Malmer, Ben McGowan, Amphone Sivongxay, and Ian Leiper. 2018. "A Spatial Overview of the Global Importance of Indigenous Lands for Conservation." *Nature Sustainability* 1: 369–74.

Grande, Sandy, ed. 2004. *Red Pedagogy: Native American Social and Political Thought*. Lanham, MD: Rowman and Littlefield Publishers.

Gruenewald, David A. & Gregory A. Smith, eds. 2008. *Place-Based Education in the Global Age: Local Diversity*. New York: Lawrence Erlbaum.

Haraway, Donna. 2003. *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Chicago: Prickly Paradigm Press.

Hugh-Jones, Stephen. 1996. "Shamans, Prophets, Priests and Pastors." In *Shamanism, History and the State*, edited by Nicholas Thomas and Caroline Humphrey, 32–75. Ann Arbor: University of Michigan Press.

Ingold, Tim. 2000. *The Perception of the Environment: Articles in Livelihood, Dwelling, and Skill*. London and New York: Routledge.

Judson, Gillian. 2010. *A New Approach to Ecological Education: Engaging Students' Imaginations in their World*. New York: Peter Lang.

Kimmerer, Robin Wall. 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Minneapolis: Milkweed Editions.

Kovach, Margaret E. 2009. *Indigenous Methodologies: Characteristics, Conversations, and Contexts*. Toronto: University of Toronto Press.

Krenak, Ailton. 2019. *As ideias para adiar o fim do mundo*. São Paulo: Companhia das letras.

McCallum, Cecilia. 1996. "The Body that Knows: From Cashinahua Epistemology to a Medical Anthropology of Lowland South America." *Medical Anthropology Quarterly* 10 (3): 347–72.

McGregor, Deborah. 2004. "Coming Full Circle: Indigenous Knowledge, Environment, and Our Future." *American Indian Quarterly* 28 (3–4): 385–410.

Meyer, Manulani Aluli. 2001. "Our Own Liberation: Reflection on Hawaiian Epistemology." *The Contemporary Pacific* 13 (1): 124–48.

Michell, Herman, Yvonen Vizina, Camie Augustus, and Jason Sawyer. 2008. *Learning Indigenous Science Form Place. A Collaborative Effort*. Saskatoon: University of Saskatchewan.

Mihesuah, D. A., and A. Wilson, eds. 2004. *Indigenizing the Academy. Transforming scholarship and Empowering Communities*. Lincoln: University of Nebraska Press.

Povinelli, Elizabeth. 1995. "Do Rocks Listen: The Cultural Politics of Apprehending Australian Aboriginal Labor." *American Anthropologist* 97 (3): 505–18.

Pugh, Priya, Megan McGinty, and Megan Bang. 2019. "Relational Epistemologies in Land-Based Learning Environments: Reasoning About Ecological Systems and Spatial Indexing in Motion." *Cultural Studies of Science Education* 14: 425–48.

Rivera Cusicanqui, Silvia. 2012. "Ch'ixinakax utxiwa: A Reflection on the Practices and Discourses of Decolonization." *The South Atlantic Quarterly* 111 (1): 95–109.

Santos, Gersem José Luciano. 2013. *Educação para manejo do mundo. Entre a escola ideal e escola real no Alto Rio Negro*. Rio de Janeiro: Contra capa/Laced.

Santos-Granero, Fernando. 2006. "Sensual Vitalities: Noncorporeal Modes of Sensing and Knowing in Native Amazonia." *Tipití: Journal of the Society for the Anthropology of Lowland South America* 4 (1&2): 57–82.

———. 2012. "Beinghood and people-making in native Amazonia: A constructional approach with a perspectival coda." *Hau* 2 (1): 181–211.

Smith, Gregory A., and Dilafruz R. Williams. 2015. "Ecological Education: Extended Definition of Environmental Education." In *Educating for Humanity, Rethinking the Purposes of Education*, edited by M. Seymour and H. M. Levin, 161–74. New York: Routledge.

Smith, Linda Tuhiwai. 1999. *Decolonizing Methodologies. Research and Indigenous Peoples*. London: Zed.

Strathern, Marilyn. 1998. *The Gender of the Gift*. Berkeley: University of California Press.

———. 1991[2004]. *Partial Connections*. Walnut Creek: Altamira Press.

———. 2020. *Relations: An Anthropological Account*. Durham: Duke University Press.

Styres, Sanda D. 2011. "Land as First Teacher: A Philosophical Journeying." *Reflective Practice* 12 (6): 717–31.

Sumida Huaman, Elizabeth, and Laura Alicia Valdiviezo. 2014. "Indigenous Knowledge and Education from the Quechua Community to School: Beyond the Formal/non-formal Dichotomy." *International Journal of Qualitative Studies in Education* 27 (1): 65–87.

Tassinari, Antonella Imperatriz, and Clarice Cohn. 2009. "'Opening to the Other': Schooling among the Karipuna and Mebengokré-Xikrin of Brazil." *Anthropology and Education Quarterly* 40 (2): 150–69.

Tom, Miye Nadya, Elizabeth Sumida Huaman, and Teresa L. McCarty. 2019. "Indigenous Knowledges as Vital Contributions to Sustainability." *International Review of Education* 65: 1–18.

Toren, Christina. 2009. "Intersubjectivity as Epistemology." *Social Analysis* 53 (2): 130–46.

———. 2011. "The Stuff of Imagination: What We Can Learn From Fijian Children's Ideas About their Lives as Adults." *Social Analysis* 55 (1): 23–47.

Tuck, Eva, Marcia McKenzie, and Kate McCoy. 2014. "Land Education: Indigenous, Post-colonial, and Decolonizing Perspectives on Place and Environmental Education Research." *Environmental Education Research* 20 (1): 1–23.

Turner, Terence. 1995. "Social Body and Embodied Subject: Bodiliness, Subjectivity, and Sociality Among the Kayapó." *Cultural Anthropology* 10 (2): 143–70.

Uzendoski, Michael. 2010. "Fractal Subjectivities: An Amazonian Inspired Critique of Globalization Theory." In *Editing Eden: A Reconsideration of Identity, Politics, and Place in Amazonia*, edited by Frank Hutchins and Patrick C. Wilson, 38–69. Lincoln, NE: University of Nebraska Press.

Vilaça, Aparacida. 2005. "Chronically Unstable Bodies: Reflections on Amazonian Corporealities." *Journal of the Royal Anthropological Institute* 11: 445–64.

Virtanen, Pirjo Kristiina. 2012. *Indigenous Youth in Brazilian Amazonia: Changing Lived Worlds*. New York: Palgrave Macmillan.

———. 2015. "Fatal Substances: Apurinã's Dangers, Movement, and Kinship." *Indiana* 32: 85–103.

———. 2019. "Ancestors' Times and Protection of Amazonian Biocultural Indigenous Heritage." *Alternative: International Journal of Indigenous Peoples* 15 (4): 330–9.

———. 2021. "*Kimapury* Reflections: Values and Research Agendas in Amazonian Indigenous Research Relations." In *Indigenous Research Methodologies in Sámi and Global Contexts*, edited by Pirjo K. Virtanen, Pigga Keskitalo, and Torjer Olsen, 229–53. Leiden: Brill Sense.

Virtanen, Pirjo Kristiina, and Francisco Apurinã. 2019. "School Histories in Amazonia: Education and Schooling in Apurinã Lands." In *Sámi Educational History in a Comparative International Perspective*, edited by Otso Kortekangas, Jukka Nyyssönen, Pigga Keskitalo, Andrej Kotljarchuk, Merja Paksuniemi, and David Sjögren, 247–64. New York: Palgrave.

Virtanen, Pirjo Kristiina, Laura Siragusa, and Hanna Guttorm. 2020. "Introduction: Indigenous Conceptualizations of 'Sustainability'." *Current Opinion in Environmental Sustainability* 43: 70–82.

Viveiros de Castro, Eduardo. 2000. "Atualização e contra-efetuação do virtual na socialidade amazônica: o processo de parentesco." *Ilha* 1: 5–46.

———. 2004. "Exchanging Perspectives: The Transformation of Objects into Subjects in Amerindian Ontologies." *Common Knowledge* 10 (3): 463–84.

———. 2012. *Cosmological Perspectivism in Amazonia and Elsewhere*. Hau Masterclass Series (vol. 1). Manchester: HAU Network of Ethnographic Theory.

Wagner, Roy. 1991. "The Fractal Person." In *Big Men & Great Men: Personifications of Power in Melanesia*, edited by Godelier, Maurice, and Strathern, Marilyn. Cambridge: Cambridge University Press, 159–74.

Walsh, Catherine, ed. 2005. *Pensamiento crítico y matriz (de)colonial: reflexiones latinoamericanas*. Quito: Editorial Universidad Andina Simón Bolivar.

Whyte, Kyle. 2018. "Settler Colonialism, Ecology, and Environmental Injustice." *Environment and Society. Advances in Research* 9: 125–44.

Wildcat, Matthew, Stephanie Irlbacher-Fox, Glen Coulthard, and Mandee McDonald, eds. 2014. "Special issue on Indigenous Land-Based Education." *Decolonization: Indigeneity, Education & Society* 3 (3).

Williamson, Karla J., and L. J. Kirmayer. 2010. "Inuit Ways of Knowing: Cosmocentrism and the Role of Teasing in Childrearing." In *Formative Experiences: The Interaction of Caregiving, Culture, and Developmental Psychobiology*, edited by C. M. Worthman, P. M. Plotsky, D. S. Schechter, and C. A. Cummings, 299–307. New York: Cambridge University Press.