

# Visualization and Movement as Configurations of Human–Nonhuman Engagements: Precolonial Geometric Earthwork Landscapes of the Upper Purus, Brazil

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**ABSTRACT** Producing geometric designs and images on materials, such as pottery, basketry, and bead artwork, as well as the human body, is elemental and widespread among Amazonian Indigenous peoples. In this article, we examine the different geometric forms identified in the precolonial geoglyph architecture of southwestern Amazonia in the context of geometric design making and relational ontologies. Our aim is to explore earthwork iconography through the lens of Amerindian visual arts and movement. Combining ethnographic and archaeological data from the Upper Purus, Brazil, the article shows how ancient history and socio-cosmology are deeply “written” onto the landscape in the form of geometric earthworks carved out of the soil, which materialize interactions between nonhuman and human actors. We underline skills in visualization, imaginative practices, and movement as ways to promote well-balanced engagements with animated life forms. Here, iconography inserted in the landscape is both a form of writing and also emerges as an agent, affecting people through visual and corporal practices. [*geometric designs, earthworks, visualization, movement, Amazonia*]

**RESUMEN** El producir diseños e imágenes geométricos en materiales tales como cerámica, cestería, obras de arte en collares, así como el cuerpo humano, es elemental y extendido entre indígenas del Amazonas. En este artículo, examinamos las diferentes formas geométricas identificadas en la arquitectura precolonial de los geoglifos del suroeste de la Amazonia en el contexto de la creación de los diseños geométricos y el tipo relacional de ser. Nuestra meta es explorar la iconografía de los trabajos en la tierra a través de los lentes de las artes visuales y el movimiento Amerindios. Combinando la información etnográfica y arqueológica del Purús Superior, Brasil, el artículo muestra cómo la historia antigua y la socio-cosmología están profundamente “escritas” en el paisaje en la forma de trabajos en la tierra geométricos labrados en el suelo, los cuales materializan las interacciones entre actores humanos y no humanos. Enfatizamos las destrezas en visualización, prácticas imaginativas, y movimiento como maneras de promover interacciones bien equilibradas con formas de vida animadas. Aquí, la iconografía insertada en el paisaje es a la vez una forma de escritura y también emerge como un agente, afectando a las personas a través de prácticas visuales y corporales. [*diseños geométricos, obras de tierra, visualización, movimiento, Amazonia*]

**RESUMO** A produção de desenhos geométricos e imagens em materiais como cerâmica, cestaria, miçanga, assim como no corpo humano é elementar e muito difundida entre os povos indígenas amazônicos. Este artigo aborda diferentes formas geométricas identificadas na arquitetura dos geoglifos pré-coloniais do Sudoeste da Amazônia no contexto de produção de desenhos geométricos e das ontologias relacionais. O objetivo é examinar a iconografia de

estruturas de terra através da lente das artes visuais ameríndias e do movimento. Combinando dados etnográficos e arqueológicos do Alto Purus, Brasil, o artigo mostra como a história antiga e a sócio-cosmologia estão profundamente “escritas” na paisagem na forma de estruturas geométricas de terra trinchadas no solo, que materializam interações entre atores não-humanos e humanos. Salientamos as habilidades humanas de visualização, práticas imaginativas e movimento como os meios de promover relações bem equilibradas com formas de vida animadas. Aqui a iconografia da paisagem é considerada tanto uma forma de escrita como um agente, afetando as pessoas através de práticas visuais e corporais. [*desenhos geométricos, estruturas de terra, visualização, movimento, Amazônia*]

Producing geometric designs and images on material constructions and objects, such as pottery, basketry, and bead artwork, as well as the human body, is elemental and widespread among a number of Amazonian Indigenous peoples. Such practices are part of the complementary relations that exist between drawings, picture writing, verbal images, body decorations, myths, and ritual chants (e.g., Severi 2012, 2015; Severi and Lagrou 2013); they also configure the relations through which humans become persons. Perhaps the most famous, however, are the Nasca geoglyphs in southern Peru, which were created by removing rocks and earth from the floor of the desert to expose the lighter sand below. While a precise understanding of the Nasca landscape still eludes scholars, it is agreed that these lines and figures were interlinked with collective memory, ritual performance, and commemorative ceremonies (Silverman 2002).

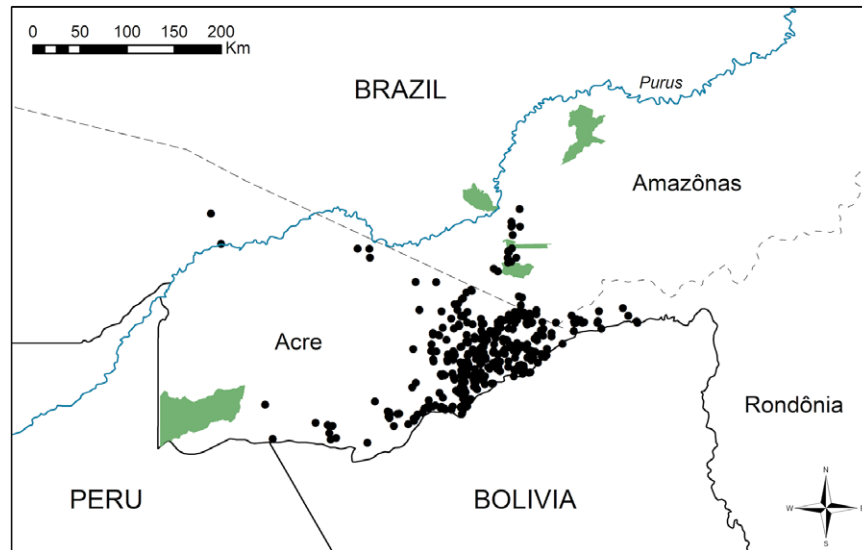
In this article, we connect contemporary geometric design making in Amazonia with landscape iconography to interpret data on precolonial geometric earthworks recently identified in the region of the Upper Purus (Figure 1) and labeled the Geoglyphs of Acre on the UNESCO World Heritage Tentative List. Archaeological studies have demonstrated that Acrean geometric earthwork sites were predominantly used for ceremonial purposes and may even have been ritual spaces for multiethnic gatherings (Saunaluoma 2012; Schaan et al. 2012). We examine these archaeological sites in light of constitutive relations between nonhumans and humans, employing knowledge about the production and usage of geometric designs contributed by the region’s contemporary Indigenous inhabitants, along with their ways of relating to other-than-human beings and movement practices. In this article, we also draw from a recent ethnographic study of the Apurinã (Pup̃kary) and a neighboring group, the Manchineri (Yine), who maintain their vitality as persons by learning to visualize and by controlling the paths they take while on the move (see Virtanen 2011, 2012, 2015a, 2015b).<sup>1</sup>

To date, around 450 geometric earthworks have been recorded in Brazil, most situated in the state of Acre and, to a lesser degree, in the states of Amazonas and Rondônia (Figure 1).<sup>2</sup> They are mainly located on the interfluvial (*terra firme*) plateaus of the Purus and Madeira tributaries. Most earthworks are found in deforested areas used for cattle ranching or agriculture, but some have also been uncovered

in the contemporary Indigenous territories of the Apurinã in the state of Amazonas. The structures facilitating movement (namely, the roads entering into and connecting the separate earthworks) and geometric forms (which are important means of visualization for the Amerindians) are incorporated and materialized in the archaeological data, providing an alternative perspective from which to study the cultural landscapes in southwestern Amazonia. In this region, the past is still visibly present in the landscape and continues to affect contemporary populations, particularly the Indigenous groups living in the area of the earthworks.

Ancient earthwork complexes, further examples of this type of monumental public architecture built by community labor, have also been documented in Central Europe, the British Isles, and North America. In Neolithic Europe, the creation of the earthworks was a collective activity that united and organized sociopolitically fragmented small-scale societies and tied them to a specific area (Valera and Evangelista 2010; Valera, Silva, and Romero 2014; Vardell and Topping 2002). In North America, ceremonial geometric earthworks, like those built by the Ohio Hopewell culture between ca. 100 BC and AD 500 in the southeastern United States, were expressions of temporality and places of gathering and feasting (Carr and Case 2005; Jones and Shields 2016). DeBoer (1997) suggests, using ethnographic analogies, that Hopewellian circular and square earthworks reflect the paired oppositions of social order and symbolism, where the square stands for such elements as “new,” “untraditional,” and “foreign.” The design precision of the Acrean geometric earthworks also displays carefully planned practices of human land use and spatial organization (Saunaluoma and Virtanen 2015), although the precise significance of the different earthwork outlines and forms in terms of relations with nonhumans has not yet been established.

Even though recent archaeological and anthropological studies have raised new theories about the sequence of Indigenous occupation in Amazonia, suggesting the existence of long-distance interaction, systems of social hierarchy, and management of vast anthropogenic landscapes (e.g., Balée and Erickson 2006; Clement et al. 2015; Heckenberger et al. 2008), we still know little about human socio-cosmologies in precolonial Amazonia. In Acre, reconstructing the history and explaining the meaning of the geometric earthworks



**FIGURE 1.** Locations of the territories of the Manchineri (in the state of Acre) and Apurina (in the state of Amazonas) collaborators and the geometric earthwork sites. (Data courtesy of Denise Schaan, the *Geoglyphs of Western Amazonia* project) [This figure appears in color in the online issue]

have been particularly challenging due to the low density of cultural remains found at the sites and the absence of other architectural features, besides the earthworks themselves. This article explores possible motives for the construction and use of the earthwork sites of the Upper Purus region by identifying the different geometric forms exhibited in the earthwork architecture and discussing them in the context of contemporary Indigenous production of life and knowledge based on relational thinking, the application and notions of geometric designs, and bodily movement.

In recent years, relational ontologies have been arousing interest among archaeologists by virtue of the potential they have to widen understanding of the constitution of past worlds and explore prehistory beyond material culture (e.g., Alberti and Marshall 2009; Bray 2009; Groleau 2009; Porr and Bell 2012). Consequently, archaeology is increasingly operating with concepts derived from alternative ontologies. This research trend originates in the recognition that modern Euro-American thought may actually build on false assumptions about what the world is really like (e.g., Herva et al. 2010); concomitantly, Indigenous peoples in regions receiving archaeological attention often maintain other ways of being and of conceptualizing reality that are highly relevant to research being conducted. Alberti and Marshall (2009) suggest that ontological breakthroughs (Henare, Holbraad, and Wastell 2007) in archaeology might be enabled by taking Indigenous socio-philosophies and theorization seriously, and that archaeological ontologies ought to be singularities emergent from specific data and contexts rather than static frameworks applied to all cases. In relational ontologies, entities are determined by their interactions in fields of social reality composed of nonhuman and human actors (e.g., de la Cadena 2015; Ingold 2006). For example, landscape elements or artifacts can, under certain circumstances,

have the properties of animate beings, which in turn affect how people engage with them and ultimately provide a degree of two-way relatedness between people and things (Herva 2009, 392).

In this article, we address anthropological theories of design making among Amazonian Indigenous peoples in the context of Amazonian visual arts and approach the landscape archeological data from the theoretical perspective of relational ontologies. In Amazonian Indigenous thinking, beings are relational in the sense that they are in a process of ongoing alteration that presupposes the possibility of transformation and of incorporating the power of the “Other” (Viveiros de Castro 1998, 2012). Following this, we examine the visualization skills of contemporary Manchineri and Apurina in order to consider the geometric earthwork landscapes as transformers. As roads are basic design elements in geometric earthwork architecture, we also discuss the role of human movement in the use and experience of the earthwork forms by addressing Indigenous oral histories and ways of moving. Drawing on Amazonian relationality and designs as configurations of relations between humans and nonhumans, we conclude that visualization and movement related to landscape features facilitate and shape certain types of interactions and engagements between human and nonhuman subjects. This sheds new light on the monumental earthwork designs situated in southwestern Amazonia, the significance of the sites, and the entities they materialize while transmitting and producing knowledge.

#### **APPROACHES TO AMAZONIAN GEOMETRIC ICONOGRAPHY**

Anthropological theories of Latin American iconographic technologies have been explored extensively by Severi and Lagrou (2013), who have shown how images relate to the

memory and imagination. Materializing iconography—in particular, geometric patterns—is related to the fluid forms inhabiting the Amazonian relational world. Different designs “bring” the presence of nonhumans to the visible world of humans for a number of Amazonian Indigenous peoples (see Belaunde [2009] on the Shipibo-Conibo; Gow [1999] on the Piro; Lagrou [2007] on the Huni Kuin; Velthem [2003] on the Wayana), while perceiving geometric designs in Amerindian art as paths from one dimension to another allows a viewer to shift between different worlds, from the visible to the invisible.

In Amazonian animist ontologies, some animals, plants, and atmospheric phenomena have agency and subjectivity, and consequently, humanity (Descola 2005; Viveiros de Castro 1998, 2012). In line with perspectivist thinking, the types of forms beings have—their bodies—also differentiate their perspectives on the world (Viveiros de Castro 1998). Geometric designs manifest the corporeality of beings and their ways of being. Therefore, geometric images materialize nonhuman beings, bringing them into existence and making them visible (Déléage 2007; Gebhart-Sayer 1985; Severi 2014, 2015; Severi and Lagrou 2013; Taylor 2003).

With regards to geometric design making in Indigenous Amazonia, Lagrou (2007, 2009b) has suggested that among the Huni Kuin (Cashinahua) the perception of images is based on specific techniques of reflexivity, the practice of creating, organizing, and limiting space with open-ended designs, and the capacity to experience visions (“virtual figuration”).<sup>3</sup> Geometric designs urge a focus of attention that produces movement and depth inside the design (Lagrou 2013, 92). For the Huni Kuin, the designs are paths that provide links to the *yuxibu* spirit beings:

Being the language of the *yuxibu*, designs function as paths leading to their owners. . . . The agential aspect of the connection between the *yuxibu* and their designs is revealed by the fact that designs link different views of perception. Rather than functioning as a means or socio-cognitive classification, they open up paths for perceptive transformation. (Lagrou 2009b, 198)

Belaunde also describes how the designs can work as agential and transformative paths: “According to the Shipibo-Conibo, the lines embody a package of ways in which beings move, travel, communicate between themselves, and transmit knowledge, objects, and powers. These paths exist everywhere, from macro to micro scales” (2009, 28). Geometric designs are thus about certain ways of thinking, perceiving, and indicating invisible aspects so they can be seen.

According to Lagrou (2009b), for Panoan- and Tupi-speaking groups, the designs are thought to be “links” between different entities, creating relations that enable the making of humans. The relations created through designs make connections between different worlds and underline the interdependence of different types of beings and entities, both revealing and hiding them. Lagrou (2007) has examined the “fixing” and transformation of bodies and persons

through communication with nonhuman beings, for whom spirits and souls (such as *yuxibu*) are fluid and capable of transforming their form. The geometric iconography of the Panoan-speaking Huni Kuin, for example, represents one way to construct, maintain, and (re)produce relations with certain nonhuman beings; painted and visualized (virtual) images are tools used to manufacture form and stability as well as fluidity. In this case, an image is no longer only a symbol, projecting something else, because it acts as a set of new relations and transforms the body, object, or person by changing the person’s way of viewing the world. From a contrary perspective, however, Lagrou (2009b, 88) claims, in a review of anthropological literature on Amerindian design making, that for several Jê-speaking groups (such as the Xavante and Bororo), their designs instigate more social distinctions, separating one person from another while still providing links to nonhumans and their powers. Generally, these nonhuman entities can change from object to subject (Santos Granero 2009; Viveiros de Castro 2007; see also Gell 1998; Ingold 2011).

It has been argued that mental imaginaries can be cultivated and shaped by spiritual training (e.g., Luhrmann 2012). Viveiros de Castro (2007, 159) describes how spirits, normally elements of the immanent background, become visible in shamans’ dreams and hallucinations, while in his study of Amazonian shamanistic experiences, Crocker (1985) argues that there is a certain standardization identifiable in the perception of dreams in this milieu. Yet, although visual images are important tools in Amazonian Indigenous knowledge practices, they are only a complementary part of them, along with oral narrations, myths, chants, rituals, and all the other elements that bring the presence of otherwise hidden, nonhuman entities. In ritual contexts, in particular, when engaging with and experiencing other-than-human beings through the medium of geometric visual designs, participants may ingest shamanic substances, such as medicinal plants, tobacco, snuff, or a vast array of psychotropic shamanic plants, also regarded as animated, which have different effects on visions. In fact, visual images, when viewed under the influence of psychotropic substances, often produce patterns of geometric designs and colors that are encountered universally. But in Indigenous ritual contexts, mental imagery is strongly related to culturally held expectations (Dobkin de Rios 1972; Stahl 1986), thereby standardizing interpretation. The use of geometric designs becomes even more potent during rituals that allow the establishment of a variety of relations through the use of ritual space, chants, and dancing. Rituals thus unify elements that are otherwise incompatible and create links in the cosmos (see Houseman [2006] on ritual effectiveness through relationality).

## **EARTHWORK ARCHITECTURE IN THE REGION OF UPPER PURUS**

We propose that the Acrean geometric earthworks were systematically constructed as spaces especially laden with visible and invisible entities. Undoubtedly, an entire array

of concealed symbolic values was linked to the earthwork architecture and their arrangement. It is surmised that they were locations that reinforced not only the communally shared identity of local people but also enabled their engagements with nonhuman entities.

Acrean earthworks consist of continuous ditches of different geometric shapes and varying sizes, in association with exterior embankments, frequently connected by ancient roads delineated by low earthen banks that also link the separate earthworks to adjacent streams. The enclosed areas range between 0.1 and 15 hectares. The era of their construction and use spans the time period of approximately 3000–1000 BP (Pärssinen, Schaan, and Ranzi 2009; Saunaluoma 2012; Schaan et al. 2012),<sup>4</sup> and, obviously, building and maintaining these monumental sites required a considerable investment of labor.<sup>5</sup> Individual sites were usually in use for between 200 and 500 years, although following the completion of the earthworks, their use seems to have been sporadic because no clearly identifiable uninterrupted residential layers have been encountered (Saunaluoma 2013). It seems, as is to be expected, that the most extensive and complex sites were used for longer periods than many of the smaller sites.

Although the earthworks present many outline variants, such as ellipses, octagons, and “U” and “D” shapes (on the variety of earthwork forms, see Schaan, Ranzi, and Barbosa 2010), the most numerous and probably the most significant are circular and square structures, which are common forms in the sacred architecture of many ancient civilizations. Circular enclosures seem to predominate in the southern part of the Upper Purus, while quadrangular forms—some with entrances on opposite sides, some on all four sides—are more common in the north. The core area of occurrence, in eastern Acre, includes sites comprising both circular and square earthworks linked by straight roads, thereby indicating that the enclosed spaces were connected and meant to be used concurrently (Saunaluoma 2012).

To exemplify the scale of diversity in earthwork types, forms, and sizes, discussion follows of earthwork structures documented at four sites in Acre (Tequinho, Fazenda Colorada, Jacó Sá, and Seu Chiquinho), situated within a radius of 12 km of the core area of occurrence (Figure 2). The Tequinho site is home to one of the most elaborate structures, and presumably it was once an important ceremonial center in the region (Saunaluoma and Virtanen 2015). The site’s earthworks comprise ditches, embankments, and roads that cover an area of about 15 ha (Figure 3). The most prominent structures are two square enclosures with external embankments. The main square has three concentric ditches, the outer ditch measuring 210 × 210 m. The depth of the ditches varies today between 0.40 m and 1 m. Situated in the main square are remnants of a rectangular embankment, now eroded and partially destroyed by a modern dirt road traversing the site. Another smaller square formed of two concentric ditches is located 150 m to the

southwest and is connected to the main square by a road 10 m wide. Half of this earthwork has been destroyed by a landslide. Originally, the outer ditch was 130 × 130 m in size. The main entrance to the Tequinho site is located on the northern side of the main square, formed by a road that is 40 m wide and almost 1.5 km in length. A road 7 m wide leaves the eastern side of the main square, crosses an eroded walled enclosure measuring 80 × 80 m attached to the outer embankment of the main square, and finally reaches an area currently covered by forest 360 m away. On the western side of the square, remnants of a road and embankment structures can be seen, although the extensive modern intrusions in this sector of the site have obstructed documentation. The southern side of the main square is also partially damaged by a natural landslide. Nevertheless, it is still possible to see on the slope a 10 m wide road heading toward a watercourse 170 m away.

Another site with substantial earthwork features is the Fazenda Colorada earthwork complex (Schaan et al. 2012), consisting of a circular ditch, a square ditch, and a U-shaped double ditch (Figure 4A). A 25 m wide walled road transects the square and the circle, continuing northeast. The circular ditch, 150 m in diameter, is 14 m wide, 2.5 m deep, and has an external embankment. The least prominent earthwork in the group is a 1 m deep square ditch, with sides measuring 200 m, located 50 m south of the circle. The U-shaped figure, with a paired 2 m deep ditch system and external embankments, is situated 75 m southwest of the square ditch. The sides of the inner U-shaped ditch are 100 m long. A 125 × 200 m trapezoidal enclosure formed only by walls is attached to the southern side of the U-shaped double ditch. The trapezoidal enclosure continues its course as a 50 m wide walled road, extending 600 m to the southwest, and gradually disappearing into the terrain.

Jacó Sá and Seu Chiquinho are less extensive examples in terms of intrasite spatial complexity and magnitude (Figure 4B). The Jacó Sá site (Schaan et al. 2012) includes a square ditch 11 m wide and approximately 3.5 m deep, with sides measuring 160 m, as well as an external embankment 14 m wide and 1.5 m high. A walled road, 40 m wide and 400 m long, runs east to west beginning at the western side of the square enclosure. Another wall and ditch complex, located 160 m to the north, is composed of a circle inside a square. The square sides are 140 m long, while the external embankment is 12 m wide and 1.6 m high. The circle contains an internal embankment and is 100 m in diameter. The depth of this second square ditch is around 2 m, while that of the circle is 1.5 m. A rectangular 60 × 80 m embankment is situated between the two above-mentioned ditched enclosures. The Seu Chiquinho earthwork, situated 800 m east of Jacó Sá, comprises two concentric ditches with external embankments; the outer is circular in form and the inner is square with rounded corners. The diameter of the enclosure is 124 m, the width of the ditches approximately 11 m, and the depth 1.8 m. The site’s road structures are no longer clearly observable.

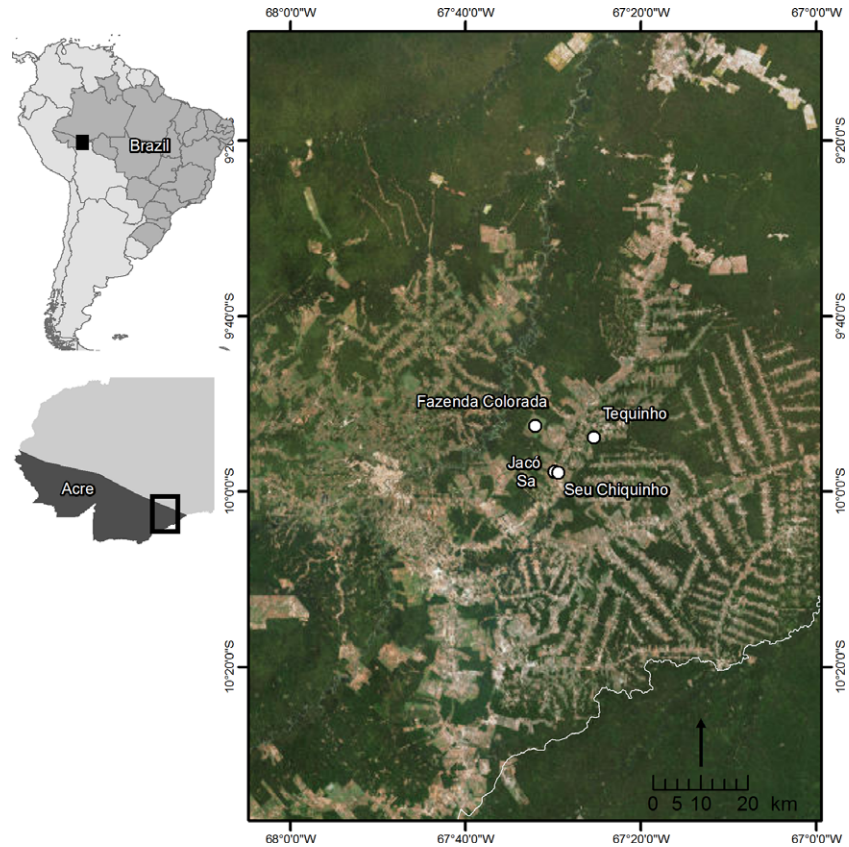


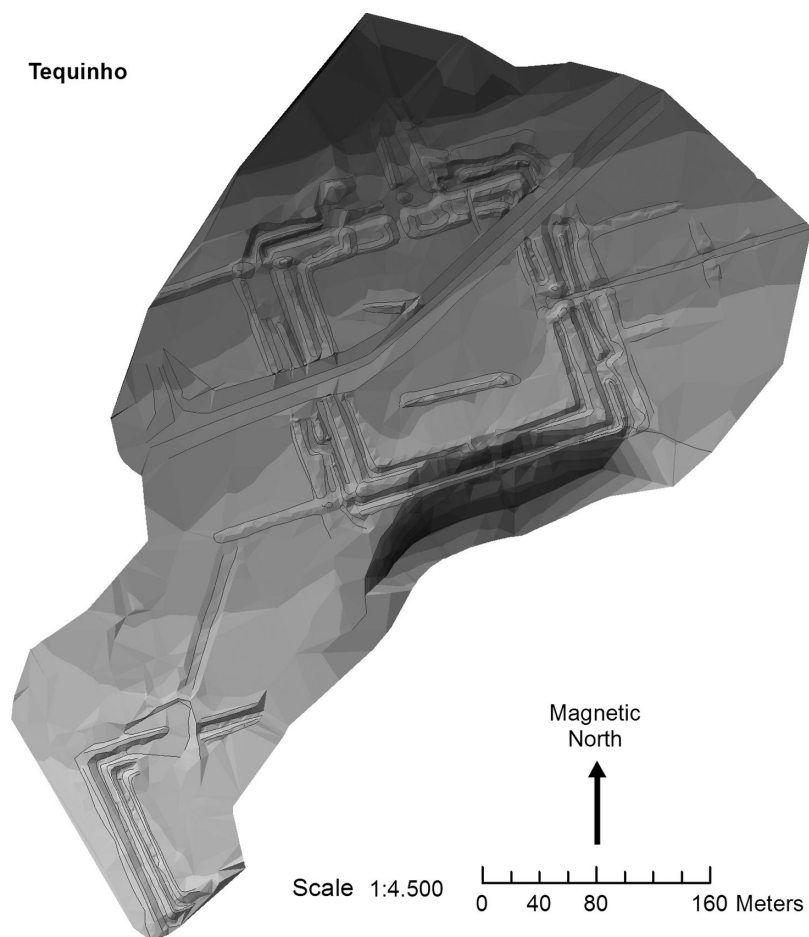
FIGURE 2. Location of the Acrean geometric earthwork sites mentioned in the text. [This figure appears in color in the online issue]

The repetitive forms (mainly circles and squares) of the earthworks and their structural precision suggest that their planning and construction involved somewhat uniform principles and methods. Spread over an area of approximately 60,000 km<sup>2</sup>, the geometric earthwork tradition can thus be considered a shared regional phenomenon that was characterized by local variants and alterations. On the other hand, the positions and forms of the different earthworks suggest that they are not related to the idea of a solid regional entirety, patterned by numerous neighboring and structurally identical monuments. Instead, each site, including those that consist of several earthworks featuring different outlines, appears to have operated as a local independent unit (Saunaluoma and Virtanen 2015).

The sites are situated close to water sources and other natural resources that ensured the subsistence of the earthwork populations. Phytolith analysis revealed that maize, squash, and palms were particularly important resources in the region during the period of active usage of the earthworks (Watling et al. 2015). Contemporary Indigenous peoples emphasize that water, food, medicinal plants, and minimal insect life are crucial factors when selecting a location for human activities—all aspects that have been taken into consideration when planning the earthwork sites. Stands of palms and other edible fruits, or traces of them, are still found in the vicinity, the outcome of long-term local human activity.

### GEOMETRIC EARTHWORKS AS ACTING ENTITIES

Because of the scarcity of archaeological evidence available, we base our argument on what we know from the use of geometrical designs and how certain geographic places are regarded in contemporary Amazonian Indigenous thinking in order to outline their life-giving, temporal, and socio-organizational functions. We address the road and embankment structures as part of the geometric earthwork designs. In Amazonian Indigenous communities, nonhuman entities, such as the sun and stars, are crucial constituents of local architecture and ritual life (e.g., C. Hugh-Jones 1979). The east–west axis of the sun affects the placement of sacred buildings in many Amazonian Indigenous communities, meaning that they are situated beneath the highest point of the sun (Stang 2009; Turner 1995), and the “path of sun” guides bodily movements in Apurinã ritual contexts (in the closing acts, participants often blow air or water first to the east and then to the west). According to a Manchineri elder, houses in the past were built with their entrances facing the rising sun so that first light could enter the dwellings. Furthermore, invisible dimensions are a vital part of organizing space and the cardinal-direction marker, a simple cross forming a square with equidistant arms, is familiar to Amazonian peoples, such as the Conibo-Shipibo and Manchineri, as well as to many other Indigenous groups throughout the Americas (e.g., Gebhart-Sayer 1985). The confluence of the four directions is sometimes interpreted



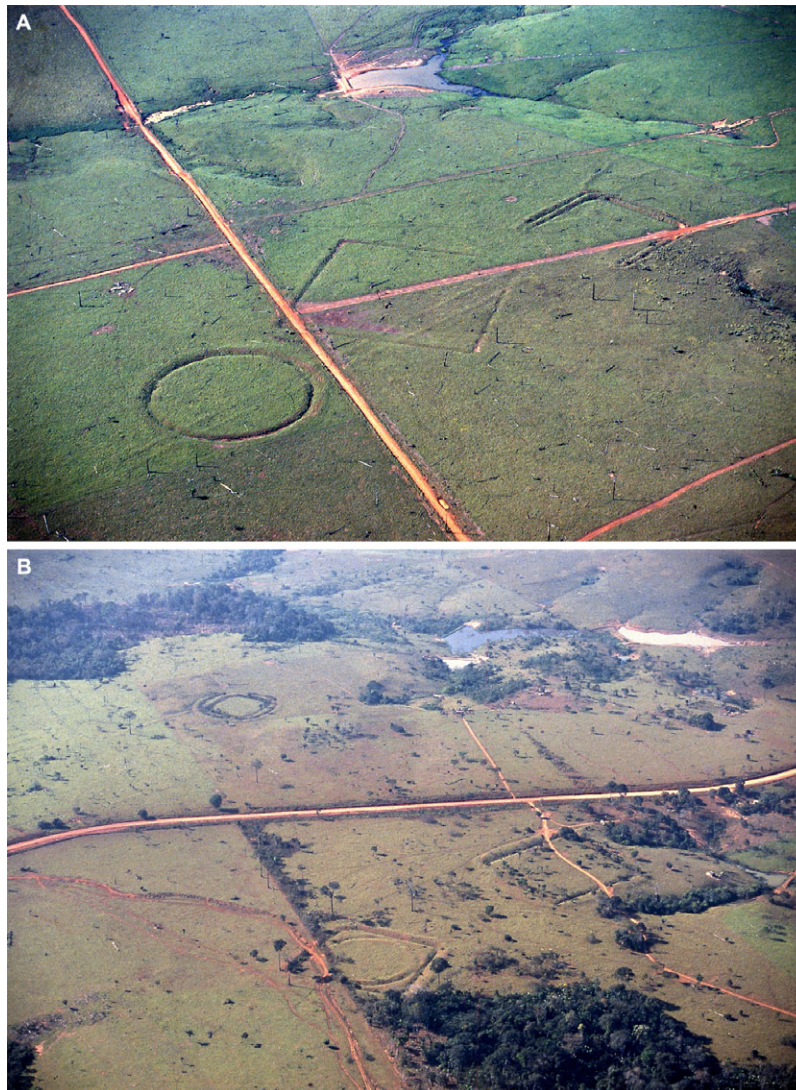
**FIGURE 3.** Map of the earthworks at the Tequinho site. (Courtesy of the United in Diversity: Monumental Landscapes, Regionality and Cultural Dynamism in Pre-Columbian Western Amazonia project)

as a central point signaling the fifth direction of up and down, a movement between the world of spirits and the mundane world.<sup>6</sup>

Among the contemporary Manchinéri, the geometric images that materialize nonhumans often lead to certain “master spirits” of fish, birds, snakes, insects, trees, and other elements of the forest and of meteorology, as well as ancestors. These images are the vital essences of the other-than-human beings to be incorporated. As maintained by the Manchinéri, geometric designs (*yunha*) possess the qualities, potentialities, and characteristics of specific nonhuman entities, and their use enables people to relate to nonhumans and cultivate their personal qualities as mutual constitutions of humans and nonhumans. For instance, the quadrangular patterns of the tortoise (*knoya*) shell painted on human legs bring the strength of the tortoise to the interior body. For the Yanomami, “images are the true center, the true core of forest beings” (Viveiros de Castro 2007, 154). Descola (2010) has noted that animistic forms of representation are analogic in the sense that certain forms and masks, for instance, have certain effects on people. But more importantly, Severi and Lagrou (2013) underline that geometric designs reference an animated world and are

paths to transformation and altering perception. Specific Manchinéri *yunha* are used for certain purposes, while the colors employed also have their own meaning: red for blood, white for goodwill, black for bravery, among others.

The shape of the *square* brings strength and resistance to many Amazonian Indigenous peoples, including the Manchinéri, often imitating the design of the tortoise (e.g., Déléage 2007, 25). In contrast to the circle, the square creates a firm position that closes the body and has also been said to represent earth and the domination of the four cardinal directions. For many Amazonian Indigenous peoples, including the Manchinéri and the Huni Kuin, the *circle* is often associated with the design on a jaguar’s pelt or the eyes of certain birds, such as the *tsiri bunu* (among the Huni Kuin), thereby providing various qualities: physical strength, for example, or the ability to see far and wide. It is also linked to fertility and life: to seeds, but also to the sun, the moon, and the sky, as well as the continuous cycle of time, to the day and night that follow each other (Belaunde 2009). It expresses the forces that maintain and reproduce life and the openness in all directions represented by the four cardinal points. Among Indigenous North Americans, the circle as a form is incorporated into dances, the design of tents, lodge



**FIGURE 4.** (A) *Fazenda Colorada* and (B) *Jacó Sá and Seu Chiquinho* sites featuring circular, square, and U-shaped earthworks as well as linear road structures. (Photographs by Sanna Saunaluoma) [This figure appears in color in the online issue]

houses and sweat lodges, and the movement of the shared pipe in smoking rituals (e.g., Williamson 1987).

Because nonhuman agents are thought to have great physical powers and can distance people from their kin, it is important to know how to relate and engage with them. Communication with the spirits is also necessary because they own the animals and forest resources; neglecting these owners or master spirits may lead to disease and even death. Moreover, at a more everyday level, the Manchineri say that certain nonhuman entities make them more cheerful, resilient, and strong, and they even turn to them for help in finding caring partners, while women are assisted with fertility and births. The designs make people healthy and provide strength and protection from enemies, evil spirits, and diseases.

Much like paths (see Belaunde 2009; Lagrou 2009a), for the Manchineri the geometric design of an animal, ancestor, or other spirit entity is considered a “vehicle” for

gaining knowledge of a specific entity, which is particularly important in learning how to control everyday existence. Thus, Indigenous iconography and design making serve as important sources of knowledge about the world, different agencies, and how to control life and death. The Manchineri train themselves to visualize in certain ways and to control their visions in order to avoid uninvited transformations and loss of selfhood, thereby mastering their relations with certain animals and other nonhuman entities that are considered to live in the same way as humans. Interactions with them take place during practices related to hunting, fishing, or treating illness, but above all in rituals. Because nonhumans can take several forms and are fluid, relations to different animal, object, and ancestor entities can be materialized and geometric forms visualized through the use of medicinal plants and through chanting—both of which are learned from an early age (Virtanen 2012).<sup>7</sup> In multispecies relations, nonhumans can also attract the qualities of other



entities with whom they live in close connection; their being is “partial” rather than complete, similar to humans (see Strathern [2004] on Melanesia). Different designs are often accompanied by others to enable new relations to be built, thereby reflecting the links between multiple species.

Thus, certain entities materialized through geometric forms, designs, or chants are simultaneously relations that produce things, make persons, and enable certain types of human existence in specific contexts, times, and places. For both the Manchineri and Apurinã, protective guardian spirits and their expressions vary from person to person, which is why ritual space is organized differently at different times, depending on the power of the humans and nonhumans involved. As for other Amazonian peoples, the practice of applying geometric designs to the body, clothes, and ceramics strengthens and fabricates their personhood and kinship in a web of relations in which nonhuman agency is an inseparable element (see Turner 2011). The ongoing use of specific forms of iconography maintains many of the practices of the ancestors, but new design patterns are also constantly being created, products of the individual’s capacity to interact with nonhumans whereby the “artist” is more like a translator, as Lagrou (2009a, 22) has noted (see Figure 5). Even though the interrelations thus created are contextual and personal, relational being with entities fabricated by designs often continues over generations because they are reminders of crucial, long-term, immaterial and material resources; therefore, designs that produce other-than-human beings are often addressed and referenced by kinship terms (see Virtanen 2011). Ultimately, the designs used by a community display the entities interrelated with and materialized by community members (see also Gow 1999; Lagrou 2007, 2009a).

In lowland South America, numerous objects—baby hammocks, stools, ornaments, even identity cards—are regarded as agents of transformation that affect and shape the life of the person, as discussed in the volume edited by Santos-Granero (2009). In a similar vein, we argue that iconography inserted into the landscape in the form of geometric earthworks is a crucial actor in producing knowledge and different types of beings, and establishing favorable social relations among humans and between nonhumans and humans. Earthworks provide the visual means of revealing entities that are normally invisible and that become visible through the act of contemplation. They also guide human movement, producing specific interactions between entities. The builders of earthworks may have utilized the structures semiotically, the earthen inscriptions functioning as indexical signs pointing to something. In the region of Upper Purus, iconography crafted in the landscape acts as an agent, leading humans to engage with nonhumans. A number of Amazonian Indigenous peoples think that geometric art acts to link different worlds of perception. Indexical connection opens a window to the macrocosmos and macrocosmic order can be iconically sketched in the microcosmos (Ball 2014)—here, in landscape designs.

However, an earthwork design is an acting sign that points to what is shown (indexical icon); thus, connections between micro- and macrocosmos are activated in the landscape.

Moreover, Descola (2013) has presented the idea of the landscape as transfiguration: a cultural process that encompasses a cosmological collection of agents who activate relations. Descola, who has worked among the Achuar of Ecuadorian Amazonia, argues that Amazonian gardens, fashioned by humans, stand for something else: they operate as signals of their prototypes, imitating the surrounding natural forest—the place of the spirits and of totality. During the process of transfiguration, constant communication takes place with spirit agencies—through dreams, for instance—and by reproducing moral teachings in the community. In sum, for Descola, a landscape is transfigured like the human body, much as humans make their kin through constantly reproduced relations.

Circular and quadrangular forms in landscape earthworks could stand for what we know about the qualities associated with the same geometric designs in Indigenous Amazonia, as explained here. Incorporating designs into the landscape may have acted as a way to transform the land and the people inhabiting it. Even today, the precolonial geometric earthworks are an indispensable part of the unique regional landscape of the Upper Purus, created over centuries of interplay between human and nonhuman beings. The legacy of the people who once built, used, and experienced the earthworks—as well as their values and even the distress caused by interacting with the variety of beings and entities—is still present in the landscape.

#### **PLACES OF TRANSFORMATION AND CONFIGURATION OF RELATIONS**

The geometric earthwork sites of Acre were abandoned around 800 years ago. Since then, the natural environment and the diversity and number of Indigenous inhabitants has changed dramatically in the Upper Purus region. The earthworks are located on elevated yet level terrains, with a good view of the surrounding landscape, and were apparently constructed not only as places providing visible control of the surroundings but also as monuments to be seen and recognized from a considerable distance. The sensing of earthwork landscapes undoubtedly affects the people who approach and visit them. Another factor that supports the idea of their monumentality is that the earthworks were built to last for generations; many are still easily distinguishable in the modern-day landscape and give rise to feelings of amazement and wonder, although Indigenous people who visit the sites experience them in ways that differ from non-Indigenous people. In 2013, when we invited a group of five Manchineris from the village of Extrema to visit the Tequinho and Jacó Sá earthwork sites, about 250 kilometers from their territory, they immediately reported feeling sensations of being in an ancient ritual atmosphere. In contrast to the Apurinã, the Manchineri do not report geometric ditches in their forested territory today. Yet, at these



**FIGURE 5.** *Apurinã* young men preparing ritual headdresses (*sapuriãta*) decorated with geometric designs. (Photograph by Pirjo Kristiina Virtanen) [This figure appears in color in the online issue]

deforested earthwork sites, they said that their ancestors had talked about these types of places, although they could not offer any explanation as to why the earthwork ditches were so deep or even why they had been constructed. Manchineri collaborators supposed that the earthworks at the Tequinho site separated the ritual space and that the smaller earthwork could have been an area for shamans: those who have the responsibility for internal and external relations with other beings. Interaction with invisible beings (spirits) requires great care and attention; therefore, an undisturbed location for the work of the shaman is essential. The Manchineri said that in the past their own villages had been situated one day's travel from the shaman's house, a distance that had to be covered by sick people who were taken to be cured by the shamans. In their memories, ritual festivities lasting several days were organized on special occasions and in special places and were attended by many participants, including visitors from distant villages.

When we showed our Manchineri research collaborators photographs of ceramics recovered from the earthwork sites, it was interesting to note that many of the decorative patterns were familiar to them. They then pointed out or reproduced on paper the designs of the tortoise, deer, raccoon, and certain fish. These images can be used in everyday life, but they are mostly painted for specific festivities, such as initiation rituals at puberty and other such events. While examining the photos, a middle-aged Manchineri collaborator said that the design on one of the vessels prevents a person using it to consume food or drink from suffering harm from, for instance, poisonous insects, snakes, or other animals. For the Manchineri, this explained why the ceramics had been decorated and used for ritual purposes (for transforming persons), clearly demonstrating the logic of design making among Amazonian Indigenous peoples, along with the transformative and protective powers the designs could possess. The ceramic vessel forms were also familiar to the Manchineri because they make similar pottery

for drinking manioc beer or cooking. Some of them are still used today, or elders have used them in the recent past.

Communal festivities held at public plazas allow people to experience and relive ancestral histories of interaction with certain nonhumans whose transformative powers are necessary for producing new life yet, outside of the ritual context, may be formless and dangerous. The rituals heal the relations between different entities. It is for these reasons that the *Apurinã* and Manchineri hold festivities, such as those that mark the transition to adulthood and fix communal social relations with both human and nonhuman beings. The ritual plazas of several Indigenous peoples of Acre and southern Amazonas states are well-maintained terrains in distant places used for dances, plays, and sacred ceremonies as well as for a variety of games, such as football, for communal meetings, and even as landing strips for small planes. Similarly, although the geometric earthwork sites may have served as ritual places and configured relations between different beings, these spaces may also have had more secular purposes, functioning occasionally as common marketplaces, still enabling collaborations between people. Like today, ritual activities in the past probably also contributed to the founding of political relations and the establishment of social hierarchies (Saunaluoma and Virtanen 2015). However, the ceremonial sites of today are not marked with embankments and ditches, and their style is unfamiliar and even curious to local people. Nonetheless, even though earth building is not practiced by the contemporary Indigenous peoples in the region, the Manchineri, for instance, tell various myths about digging the earth at the time when people saved themselves from “the end of the world.” Interestingly, however, the contemporary *Apurinã* still see topographically similar locations to the earthwork sites as places of the spirit beings.

Geometric earthworks have an important place in the current practices and memories of those *Apurinã* with whom Virtanen has discussed the phenomena. Those who live in *Apurinã* territories along the BR-317 highway, where

earthwork sites have been registered in deforested areas of the demarcated territories, do not use the earthwork structures for housing, economic activity, or any other daily routines. The Apurinã narrated that their parents had advised them to pass by the earthworks quickly and avoid their vicinity when possible because they signify difference, promote avoidance, and are regarded as “enchanted”, or “miraculous” places. “They are the places of spirits” and “there is something in there,” were frequent comments when talking about them. On the other hand, the Apurinã in these territories, close to urban areas, have now taken the sites as proof of the long-term presence in the area of Indigenous peoples and are starting to raise the issue on their own behalf. Their understanding of the potentiality of the sites with regards to their claims for expansion of their lands was transformed when archaeologists became interested in studying and registering the earthworks.

The Apurinã of the Tumiã River, who live in diverse forested landscape further north (four days boat trip down the river), approach and speak of the topographically similar sites with caution. For them, various spirits inhabit ditches or lakes, revealing how certain topographic features play an important role in their thinking. Ditch formations are thought to be occupied by powerful beings, such as a giant *taia* fish and the *mapinkuari*, a huge fearsome creature. Virtanen was taken by the Apurinã to see some ditches called “the house of *taia*” and “the house of *mapinkuari*.” Lengthy and detailed oral histories based on the experiences of past community members describe how these beings threatened and even killed people. For example, in one place, the *taia* had once dragged several people toward its ditch (also called “the power of *taia*”) before an ancient Apurinã shaman had finally managed to calm it. Their places are still navigated with careful attention, thereby both affecting people’s ritualized movement around them and also indicating that nonhuman beings have their own histories, even if they are closely intertwined with the history of the Apurinã.

The monumentality of geometric earthworks produces the impression that they are pointing to something as well as emphasizing desired relations with specific beings. Even the soundscape (see Moore 2005) must have been very different in and around the earthworks compared to that of the surrounding environment due to the effect that deforestation at the site has had on sounds. Renfrew (1983) has suggested that the underlying principle of megalith monuments was to materially induce a sense of social unity in space, but in Amazonia, social persons are not regarded as bounded entities: the created unity is rather a temporary act of creating boundaries around multispecies beings in a world in which beings are constantly changing (see Strathern 2004). Topographic elements, soils, countless rivers, vegetation, animals, sky, and meteorological entities are all inseparable components of the Amazonian landscape. Approaching and entering the earthworks may, however, have given rise to emotions and feelings of unity inasmuch as their users were relating to something dissimilar, yet at the same time,

something that provided protection for the people who built and used them, in contrast to the diverse and to some extent uncontrollable beings outside of the sites. Meanwhile, the earthworks may have offered the experience of being a member of a collective sharing the same lifeworld and values.

Wright (2013) discusses the multicentered mythscapes of the Arawakan-speaking Baniwa in northwestern Amazonia that are present in nonlinear creation narratives and refer to numerous exceptional geographic features as places of the spirits, primordial beings, and shamanic protection. This sacred geography connects to the most crucial events of the ancestral time, providing portals to the sacred. Like the geometric earthwork sites, they are ambiguous places: sources of power and poison alike. Interestingly, similar sacred places of the spirits and ancestors, “houses,” circular in outline, are also described among Panoan speakers in Marubo poetics in southwestern Amazonia that refer to shamans’ journeys (Cesarino 2011).

Stephen Hugh-Jones (2012, 138) states that not only iconography but also certain landscape characteristics can reveal signs of the ancestors and traces of their past activities (see also Morphy 1991). Santos-Granero (1998) has used the term “topographic writing” to refer to the Yanéscha’s way of recalling and transmitting cultural history by inscribing it in certain landscape features, which then act as mnemonic devices. The Arawakan-speaking Yanéscha, who today inhabit the Peruvian Amazon, include references to specific geographical landmarks and places associated with past events in their myths and related narratives. As Moore contends, “Sacred landscapes are just one manner in which humans make symbolic statements about social order” (2004, 88). In the Amazonian context, however, this is an active process of interaction with different entities. The domestication of the landscape by thorough and continuing human-environment interaction has been noted (Erickson 2006), yet in the Amazonian animated cosmos, earthwork iconographies operate as crucial actors in ritual practices and moral reasoning. During these processes, other-than-human beings that manifest themselves through, for example, visions, vibrations, movements, and sounds are brought to visual and even material form. As already noted, designs produced on the surfaces (clothes, ceramics, human bodies) change their interiority (see Gow 1999, 118–21), and, likewise, the earthwork designs may have acted as pathways to transform people when they were physically inside of them. Amazonian geometric earthworks as places of encounter, therefore, offer revealing insights into how their constructors strove to produce different beings and relationships, how they created social boundaries between different relational types of beings, and how they experienced the world in which they lived.

#### **LINES OF TRANSITION AND MOVEMENT**

We have addressed the contemporary Apurinã’s understanding of the earthwork structures as having transformative

powers and the Manchinieri's view of geometric designs as doors to the world of spirit entities. Movement and visualization of geometric designs become central issues in the analysis of the iconographies of the landscape. In the Upper Purus region, road structures constitute an inseparable part of the precolonial earthwork designs. They are an extremely significant feature, not only in connecting the individual earthwork structures but also in linking the sites to the profuse network of upland streams, thereby creating a complex regional system of fluvial and terrestrial routes. Meanwhile, they are often open ended, like pathways in Ingold's meshwork (2011), or similar to the geometric designs used in Amerindian art and visualization (Lagrou 2007). Furthermore, it has also been asserted that long, straight lines in the Amazonian cosmos are rivers or umbilical cords that lead to the womb, symbolizing life (C. Hugh-Jones 1979).

Paths are related to a flow of vitality and power. An Apurinã shaman explained during Virtanen's fieldwork how he leads his patients toward the places of powerful beings in the forest but does not let them reach these places of the spirits, as they are very ambiguous, both curative and dangerous. Instead, he leaves the patient on the path and goes alone to the destination. From there he sends transformative powers to the patient. Furthermore, the same shaman explained how his shamanic initiation had eventually ended when a jaguar appeared to him in a vision, approaching him on a long, straight path. The jaguar had transformed into a man and, after a lengthy fight, had given him shamanic stones (*isuryke*) as tools for shamanic work.

In lowland South America, well-planned ancient road networks between clustered settlements and other activity areas have been discovered across the Bolivian Llanos de Mojos and the Upper Xingu region in Brazil. In Llanos de Mojos, roads served many overlapping purposes: they provided a vast transportation network for foot traffic, may have regulated floodwaters, and probably had important political and specific sacred functions (Erickson 2000, 2001). Investigations in the Upper Xingu (Heckenberger et al. 2008) have demonstrated a network of permanent plaza villages, built with standardized geometric and relational principles, and interconnected by formal road architecture. The contemporary Indigenous peoples of central Brazil who live in circular villages still maintain the tradition of using the roads entering their villages for ritual displays and racing. As with physical movement in rituals, the architecture of these villages often follows the same east–west line as the path of the sun (Stang 2009; Turner 1995).

Amazonian ritual plazas offer carefully ordered spaces to which to invite and materialize the most powerful of nonhumans in order to communicate with them at specific times; they are, therefore, meticulously cleaned, both for reasons of ritual and, more generally, to reduce the presence of unwelcome creatures, such as poisonous snakes and insects. Most importantly, among the Apurinã, for instance, the powerful spirits and those of meteorological and atmospheric phenomena, such as wind and storms, are called to

communal festivities by ritual acts involving a number of elements: consumption of certain substances, specific speech forms, musical instruments, and chanting. In earlier times, inviting certain spirits, such as those called *kamatxi*, was undertaken only by shamans. The spirit entities can arrive from different cardinal directions. Besides the form of the ritual place itself, the phases of the moon and other celestial “persons” also play a notable part in the production of relations between beings. Earlier, we mentioned the importance of the “path of the sun,” but interactions with the moon are also carefully brought about. For example, the Ashaninka position their plazas so that at a specific period in the lunar cycle the moon illuminates the ritual space and thus brings the presence of this agentive spirit being (Benki Ashaninka, personal communication, 2013). The farewell of the spirits sets its own closing ritual practices and movements (Figure 6).

The precolonial roads at the geometric earthwork sites apparently guided movement toward the central sectors and, at the same time, controlled entrance to, and exit from, the complexes (Saunaluoma 2013). The road structures incorporated into the geometric enclosures may have functioned as ceremonial pathways and as transitional lines between different ceremonial spaces, in which both humans' and nonhumans' movement, entrance, or removal can be highlighted. The use of the roads implemented in the geometric earthworks may have constituted a vital component in ritual performances and functioned to separate and transform the diverse ritual contexts and participants in place and time. In the same way, approach to—and passage through—the sites along the roads at certain precolonial civic-ceremonial centers in the central Andes seems to have been an important element of the ceremonial institution (e.g., Burger and Salazar-Burger 1998).

Tilley (1994), studying the landscapes of megalith monuments in Britain from a phenomenological perspective, argues that the experience of space is about movement, body, and landscape; the space within the monument must be understood alongside that of the surrounding landscape, as landscape is inseparable from the movement that the monument imposes. Tilley asserts “to understand landscape, it must be felt” (1994, 31). Walking through a geometric earthwork site generates a bodily reaction to a space loaded with hidden meanings. Entering a square enclosure may cause a different bodily sensation from that of moving around in a circular space. When walking along these paths during a specified moment, a person might have not only been physically moving from one place to another but also aiming at transformation and the incorporation of the qualities of some other (nonhuman) being(s).

Moreover, given the evidence that the geometric earthwork sites were places for ceremonies and communal gatherings, it is not surprising that people aimed to reach them from various directions from within, and perhaps beyond, the area in which they are found. Pérez (2012, 93) argues that the movement related to the Hopi pilgrimage in North America is about walking in the footsteps of the ancestors



**FIGURE 6.** *The spirits called to the Apurinã kynyry festivity are sent off by throwing the ritual objects into a river at dawn. (Photograph by Pirjo Kristiina Virtanen) [This figure appears in color in the online issue]*

or deities, chanting and retelling landscapes. The trails associated with Hopi ancestors have cultural values that derive from the physical inscription of tribal history on the land and spiritually link Hopi villages with outlying sacred features of the landscape (Ferguson, Berlin, and Kuwanwiswima 2009, 21, 23). For the Huichol people in Central America, a pilgrimage of several weeks duration is about communication with the ancestors, and during it people have to renounce several mundane practices (Myerhoff 1974).

As stated by Jackson (1989) and Erickson and Walker (2009), roads and paths are an essential feature of human landscape, evidencing patterned movement of humans through their surroundings. However, in addition to serving as basic routes of movement and connecting areas for hunting and gathering, the regulated directions of movements through the roads of the earthwork complexes have taken into account the other-than-human beings. Following Ingold (2011, 141–42), monumental geometric earthworks and their roads are constituted by routes, movements, and becomings, both of humans and non-humans, thus producing a certain type of landscape. The role of nonhumans in shaping the landscape is crucial; they arrive from certain directions at different times. Moreover, among the contemporary Apurinã and Manchineri, parents teach their children ways of avoiding the threats caused by nonhumans inhabiting certain places when moving through the environment, and these become central to personal experience when moving around and growing up, making healthy, strong, and solid human beings (Virtanen 2012, 2015a). Roads, tracks, and paths not only enable and sustain economic and political systems but also are equipped to materialize memories, identities, and long-established ways of being and knowing. In this regionally lived social reality, the iconography of Amazonian monumental geometric landscapes, including the roads leading to the places of encounter, produces social borders that once materialized and configured local relatedness to different types of beings.

Among a number of today's Indigenous peoples in the region, residents from other villages are often invited to the festivities that take place in different villages in a rotating order, and the arrival of visitors is always an important part of the event. As discussed in detail elsewhere by Virtanen (2015b), oral histories of the Apurinã and Manchineri also reveal that in the past they used to trek through the forest to the territories of other Indigenous groups based along other rivers and even other river basins. The paths enabled faster travel than the winding rivers, though the contemporary situation differs somewhat because of motorboats. Together, the paths and rivers form an extensive network for movement, which in the past also occurred for economic reasons, such as trade in cotton clothes. Moreover, the paths probably operated as lines of communication, maintaining dynamic regional and interregional relations. Mobility was also an important way of making political and economic alliances and reinforcing kinship ties.

## CONCLUSIONS

The fostering of the capacities of visualization and ritualized movement discussed in this article can be understood in the context in which Amazonian (non)human entities are actively engaged, addressed, and encountered. These encounters have produced certain types of landscapes with peculiar geometric features that, following contemporary Amazonian Indigenous thinking, are not merely physical entities but also are considered as having had agency in certain situations. We have explored design-making traditions and enhanced approaches to the visualization of designs among contemporary Indigenous inhabitants in southwestern Amazonia. These practices show how geometric designs are actors enabling and affecting the production of relations with specific nonhumans. Drawing from studies on Amazonian ontologies and relationality (e.g., Descola 2004; Viveiros de Castro 2007, 2012), Indigenous peoples' practice of visual arts (Gebhart-Sayer 1985; Lagrou 2007; Severi 2014, 2015;

Severi and Lagrou 2013; Velthem 2003), and ethnographic data, this article has shown how the geometric earthwork figures are considered marking ritually significant places and simultaneously act as paths to the invisible, transforming beings to bear on the maintenance of life. The geometric earthworks are avoided by contemporary Indigenous populations; they are not used for mundane activities, and topographically similar places are narrated in oral history as locations that should be approached, interacted, or passed through with care. Furthermore, the earthworks can be understood, in the context of Amazonian body paintings and other ritual and sensorial practices, as marks in the landscape functioning in similar ways as geometric designs when produced on the surfaces of objects and on the human body.

In the region of the Upper Purus, ancient history and socio-cosmology are deeply “written” onto the landscape in the form of geometric earthworks carved out of the soil, which merge nonhumans and humans into one. We are not arguing for a cultural continuity between the constructors of the earthwork sites and contemporary Indigenous groups. However, ethnography and anthropological theories can offer a way to understand the earthworks of the Upper Purus from the point of view of animist representation: how they reproduced relatedness between local people through links between humans and nonhumans but also produced multispecies forms of beings. Furthermore, the transfiguration of the landscape (Descola 2013) through iconography expressed preferred engagements between humans and nonhumans aimed at guaranteeing the soundest and most successful production of persons as members of collective as well as subsistence activities. In the same way as the ritual use of geometric designs among several Amazonian Indigenous peoples in recent times is understood, for the builders of the ancient earthworks the interactions with geometric designs inscribed in the landscape could display social boundaries and reduce links to other communities beyond the region.

The idea of landscapes being related to the values and thinking of people inhabiting and constructing it has been noted elsewhere (Cosgrove and Daniels 1988; Moore 2004; Morphy 1991), but here we point to the practice of visualization of the “invisible” to materialize entities through design and movement, which acts as the basis for the configuration of human–nonhuman relations. For Amazonian Indigenous groups, inscribing iconographic features in the landscape is a form of “writing” that is an emerging agent that affects through visual and corporeal interaction. This introduces the idea that design-making practices are part of knowledge production. We suggest that in the configuration of human–nonhuman relations, fostering visualization skills must have been typical and constructive for these communities. Furthermore, these special capabilities of perception of virtual images that materialized nonhuman interaction provided the dynamism for the construction and compositions of the sites. Luhrmann (2011, 2012) has argued that nonpathological

hallucinations or “sensory overrides” occur in a number of places, and local ideas shape the ways mental events are welcomed and understood. She has further observed that in some cultures experiences of other-than-human beings are the norm, and the role of the imagination is crucially important in making something in the world. This is typical of Indigenous groups studied in Amazonia, where sensorial phenomena can have an epistemic stance and be a social experience. The experiences of other-than-human beings can be authoritative, and in rituals, in particular, people have social experiences that are phenomenologically described.

Visualization and movement associated with geometric forms may exceed Western perceptions of ideas of materiality and immateriality or of entities being fixed in only one form, underlining action and how people have learned (see Ingold 2013). Through the geometric earthwork designs, visions were shared materially and immaterially, and eventually experienced collectively, gaining power, strength, protection, and other desired qualities of the moving body of the ritual participants. With the period of European colonization, Amazonian Indigenous peoples’ movement and interaction with sacred sites became restricted, but today visualization through the practice of Indigenous arts and shamanism is active. These skills could be transmitted and experienced by constructing the earthwork sites by approaching and entering them, and finally by being inside them. Contemporary Indigenous approaches to movement and geometric designs reveal how the landscape emerges as an emotionally affective agent, even after the precolonial era.

We have offered an alternative interpretation of the meaning of the geometric earthworks of the Upper Purus: these anthropogenic landscape features functioned as systemic devices to engage with, and travel within, the world of invisible entities, on the one hand, and to maintain the feelings of unity, continuity, and belonging to the place in the world of humans, on the other hand. Our aim was to find and examine new perspectives in the analysis of landscape archaeological data, and anthropological theories and local ethnography have contributed to our project. The benefit of relative approaches for archaeology lies in their serving as an intellectual exercise or thought experiment, as Holbraad (2009) puts it. The reevaluation of the variable cultural meanings of things can help us to widen the understanding of the contextuality and temporality of the material world and how people could have engaged with it in the past. Meanwhile, for anthropologists, archaeological evidence materializes the invisibility of things and makes it easier to perceive other modes of relating to material culture within a deeper time span and on a larger spatial scale.

## NOTES

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1. The territories of Indigenous groups that Virtanen has worked with for this research are marked in Figure 1.
2. New earthwork sites are constantly found in the region.
3. Virtanen has also worked with the Huni Kuin people.
4. In Peruvian coastal regions, ceremonial centers featuring large, open plazas and terraced platforms were built as settings for the rituals and social gatherings of small-scale societies as early as the Initial Period (ca. 1500 BC–900 BC) (Burger and Salazar-Burger 1991; Moore 2005).
5. Pärssinen, Schaan, and Ranzi (2009, 1090) have estimated that at least 300 people would be required to build an average-sized geometric earthwork site in a relatively short period of time.
6. Dillehay (2007) has described how space for the Araucanians in Chile is a fundamental conjunction between their coded version of the visible, lived world on the earth's surface and the invisible ethereal world of knowledge-bearing "cosmological" surfaces or planes—the ideological architecture where different good and evil ancestral spirits, deities, and lesser figures exist.
7. Among the Apurinã, discussion of dreams and their meanings begins in childhood (see Virtanen 2015b), though they rarely describe their dreams in terms of geometric designs.

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