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Ethnoontology: Ways of world-building across cultures

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Abstract

This article outlines a program of ethnoontology that brings together empirical research in the ethnosciences with ontological debates in philosophy. First, we survey empirical evidence from heterogeneous cultural contexts and disciplines. Second, we propose a model of cross-cultural relations between ontologies beyond a simple divide between universalist and relativist models. Third, we argue for an integrative model of ontology building that synthesizes insights from different fields such as biological taxonomy, cognitive science, cultural anthropology, and political ecology. We conclude by arguing that a program of ethnoontology provides philosophers both with insights about traditional issues such as debates about natural kinds and with novel strategies for connecting philosophy with pressing global issues such as the conservation of local environments and the self-determination of Indigenous communities.

1 | INTRODUCTION

Philosophers often imagine cross-cultural variation of ontologies through ethnographic thought experiments such as Quine's (1960) "gavagai" and anecdotes such as the infamous "Eskimo words for snow" (Martin, 1986). In contrast to such imagined ontological alternatives, academic philosophy has paid astonishingly little attention to empirical research on cross-cultural diversity of ontologies. Although there is a growing body of research on ontology building in fields such as ethnobotany, ethnoecology, and ethnomedicine, there has been barely any discussion of empirical research on local ontological systems in academic philosophy. This article outlines ethnoontology as an empirically informed approach to ontological issues in cross-cultural contexts. After surveying empirical evidence about ontology building in Indigenous and other local communities, we show how an empirically informed methodology can

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contribute to rethinking philosophical debates about issues such as universalism and relativism. We also argue that ethnoontology can connect ontological debates in academic philosophy to applied questions about local livelihoods and sustainability in global contexts. Ethnoontology therefore complements developments in African (e.g., Gyekye, 1995), Asian (e.g., Asakura, 2011), and Indigenous American (e.g., Maffie, 2014) philosophy that emphasize the need to broaden the geographical scope of metaphysical and ontological debates in academic philosophy.

2 | CROSS-CULTURAL ONTOLOGICAL VARIATION—THE STATE OF EMPIRICAL RESEARCH

By "ontology" here, we mean the way that the world is organized according to a particular cultural group. Ontologies include an inventory of the types of things that exist, the classes that they sort themselves into, the properties they have, and relations they stand in. "Category" here generically refers to the elements of ontologies. Categories are not identical with concepts (forms of mental representation), they are not invariably lexicalized or otherwise explicitly marked, and they do not necessarily constitute kinds (causally or explanatorily robust clusters of properties).

Cross-cultural relations between ontologies can be addressed across a wide range of domains from stars and meteorological phenomena to social institutions and emotions. Ethnotaxonomy of animals and plants has become one of the most established research programs for comparing categories across cultures (Albuquerque & Alves, 2016; Berlin, 1992). Developing in opposition to relativist traditions in cultural anthropology, ethnobiology of the 1960s and 1970s formulated strong universalist programs that emphasized cross-cultural stability of biological categories (Berlin, Breedlove, & Raven, 1973; Diamond, 1966; Hunn, 1977). Drawing on empirical evidence of cross-cultural similarity, many ethnobiologists embraced metaphysical accounts of biological species as natural kinds that are recognized in otherwise heterogeneous cultures. For example, Diamond (1966) investigated bird categories among the Fore amana ake in Papua New Guinea and compored local ethnotaxa with categories employed by academic taxonomists. Diamond not only found cross-cultural categorical stability but also a metaphysical justification: "The nearly one-to-one correspondence between Fore amana ake and and species as recognized by European taxonomists reflects the objective reality of the gaps separating sympatric species" (1966, p. 1103).

Although cross-cultural stability continues to be a topic of ethnobiological research (Begossi et al., 2008), there has also been increased focus on the cross-cultural variation of biological ontologies. Indeed, cross-cultural stability has been well-confirmed in some areas (e.g., many mammal taxa) but also has to be qualified through different levels of analysis (e.g., higher taxa or varieties), biological domains (e.g., invertebrates or fungi), or sociocultural (e.g., economic or spiritual) importance. Increased interest in cross-cultural differences between biological ontologies has also been shaped by the growing role of applied and normative concerns in ethnobiology (Nabhan, 2016). Much of this research is focused on the unique cultural expressions of biological knowledge and its contributions to maintaining livelihoods and environments. In ontological terms, this research investigates how local concerns and values can become reflected in local categories (Ludwig, 2016). For example, local concerns about ecological roles and behaviors of birds can contribute to categories that depart from academic taxonomy because they are shaped by different sets of criteria (Alcántara-Salinas, Ellen, & Rivera-Hernández, 2016).

Although ethnobiology has been at the center of many controversies about cross-cultural relations of categories, a wide range of ethnosciences have emerged in the second half of the 20th century including ethnoecology, ethnomedicine, ethnopedology, ethnophysiography, and ethnosociology (Rist & Dahdouh-Guebas, 2006). Many of these ethnosciences do not engage with traditional examples of natural kinds such as biological species, and research in these fields therefore tends to be less inclined to emphasize cross-cultural stability. For example, ethnopedological research on local soil categories (Barrera-Bassols, 2016) and ethnophysiographic research on landscape categories (Mark, Turk, & Stea, 2010) tend to emphasize the importance of local concerns in ontology building. Landscapes are divided up according to a mixture of inherent geologic and hydrologic features, ecological structure, and affordance of culture-specific uses, including not only shelter, agriculture, and wayfinding but

also ritual practices such as pilgrimage, worship, and sacrificial offerings. Consequently, a traditional farmer who addresses soil types through suitability for specific farming practices will draw different distinctions than a Western soil scientist (Ludwig, 2017). An Aboriginal hunter will employ a separate taxonomy of landscape features than an urban American who may mostly think in terms of broad categories such as *river*, *mountain*, or *valley*. Among the Yolngu people, for example, landscapes are composed of cosmologically significant sites distinguished by their links with ancestral beings (Tilley, 1994). These sites' boundaries are delimited by features that are reflected in a rich vocabulary of place-specific topographic and environmental descriptions many of which also track recurrent patterns of ecological resources (Morphy, 1991).

While there is a growing number of ethnosciences, not all empirical research into local ontologies is explicitly formulated with an "ethno"-prefix. Much recent work in sensory anthropology and sensory history has focused on the ways that distinctive ontological significance is given to sensory experiences across cultures (Classen, 1993; Smith, 2007). For example, among the Semelai and Semaq Beri of Malaysia, odor plays a central cultural role (Kruspe & Majid, Forthcoming). Kinds of game animals and other foods are categorized by smell, as are people. Everyday life is governed by a complex system of ritual prohibitions centered around these odor categories, often backed by the intervention of supernatural entities. Odors are invoked as weapons in shamanic rituals and believed capable of transmitting messages to the spirit world—the wrong odors can offend the thunder deity and bring about disaster. Similar powers are ascribed to odor by the Kwoma people of Papua New Guinea, who hold that even inanimate objects such as spears and yams are sensitive to "odor contamination" resulting from ritual violations and will respond unfavorably to it (Howes, 2003). Sounds play a comparable role in other cultures, especially when reliance on vision is less reliable thanks to the prevalence of dense forest cover (Feld, 2012).

The wider context of cultural anthropology also involves debates about the "ontological turn" that has captured the imagination of anthropological theory (Holbraad & Pedersen, 2017) but remains largely disconnected from ontological debates in academic philosophy (however, see Paleček & Risjord, 2013). Much of the most prominent literature of the ontological turn focuses on differences between Indigenous and Western perspectives and tends to articulate ontological difference through Indigenous metaphysics and deep differences regarding issues such as animism, totemic bonds, forest spirits, or shamanic transformations (Descola, 2013; Viveiros de Castro, 2014). Consider the perspectivism that Viveiros de Castro (1998) discerns in Amerindian cultures. According to the perspectivist cosmology, humans and animals possess the same type of soul, imbued with identical perceptual, cognitive, and volitional capacities. In virtue of this, humans and, for example, jaguars perceive the world identically: jaguars also see themselves as having human-like bodies and mannerisms, see humans (potential prey) as tapirs, the blood that they drink as being manioc beer, their coats as fine clothing, etc. Thus, when shamans wear animal skins, they aim to transform their own bodies into those of the animals so they may act within the same world that they do. Drawing on such cases, proponents of the ontological turn emphasize that "nature" itself is not a natural kind, but a contested and unstable category (Descola, 2013).

However, just as ethnobiological claims of cross-cultural similarity need qualification, so do claims of radical ontological difference. Consider the animism debate. Animists consider nonhuman entities (e.g., plants, forests, or rivers) as intentional actors (Harvey, 2005). There is substantial evidence that animism is a widespread metaphysical view. For example, the Nayaka people of South India consider not only certain animals but also stones, hills, cups, and knives to be *devaru*: beings that stand in active, quasi-social relationships with them (Bird-David, 1999). *Devaru* are aspects of a larger kin structure that incorporates potential "partners" in the nonhuman world. In addition to these ethnographic observations, there are intriguing cross-cultural similarities in animist ontologies. Indigenous communities around the world tend to be much more permissive in their ascription of intentionality than Western participants (Ojalehto, Douglas, & García, 2017).

This evidence emphasizes animism as a coherent form of ontological difference that is unevenly distributed. However, there are also arguments that depict animism as a more general tendency across all human cultures. For example, the precise bounds of intentionality are far from settled even in Western science, as illustrated through heated controversies about plant cognition (Adams, 2018). Some anthropologists of the ontological turn have

combined ethnographic documentation of animism with general philosophical arguments in favor of more permissive ontologies of intentional beings and personhood (Bennett, 2010; Harvey, 2005). These go further in claiming not only that animist commitments are widespread but also that some form of animism is plausibly true. Finally, some critics have attempted to deflate radical difference claims by arguing that animism is not a genuine ontological option but instead a pervasively mistranslated system of metaphors (Peterson, 2011; Wilkinson, 2017). The latter difference-erasing strategy raises difficult issues that we cannot pursue here about the methodological constraints on positing profound ontological difference (Davidson, 1973).

3 | BEYOND UNIVERSALISM AND RELATIVISM

The complexity of ethnoscientific evidence challenges both simple versions of ontological universalism and relativism along descriptive, epistemological, and metaphysical levels of analysis. On the *descriptive* level, Ludwig (2016) has suggested replacing simple universalist and relativist models with an account of "partially overlapping ontologies." On the one hand, there is substantial cross-cultural overlap between ontological systems that provides common ground for communication and collaboration. For example, overlap in biological ontologies allows local communities and academic researchers to refer to the same species and ecological phenomena. Shared ontological elements facilitate joint action and enable the pursuit of collective goals that span these distinct cultural groups. As such, the search for areas of ontological overlap constitutes the basis for co-management and conservation that have become widely embraced in environmental and sustainability sciences (Berkes, 2018). At the same time, ontological overlaps are typically only partial and need to be supplemented by recognition of unique cultural elements in ontology building. A model of partial overlaps therefore provides an alternative to overemphasis of either similarity or difference and avoids overly optimistic accounts of seamlessly shared worlds, as well as overly pessimistic accounts of incommensurability without any possibility of mutual understanding.

On the *epistemic* level, partial overlaps can be analyzed through the influence of local concerns and purposes in ontology building. Ethnosciences often address categories that are "anthropic" (Weiskopf, 2018) in the sense that they are shaped by distinct practical purposes and modes of representation. Often this results in categories that crosscut those of biological systematics. For example, kinds of plants may be distinguished partonomically (by morphological features such as stems, leaves, bark, and roots), but these parts in turn are grouped by their medicinal, nutritional, and ritual uses—that is, by their role in specifically human practices. Similar phenomena occur in classifications of minerals and other material substances, for example, the chemically distinct, but religiously and artisanally valued gems collectively categorized as "turquoises" by the Aztecs. The anthropic character of everyday categories can explain why ontological overlaps are only partial insofar as different purposes drive the formation of different categories. At the same time, similarity in purposes can also drive categorical similarity. A traditional hunter in the Amazon and the Congo rainforest may be culturally distinct in many ways but also share similar concerns in behavioral or morphological traits of animals that can lead to overlapping criteria in ontology building.

While ontological overlap can be the product of overlapping purposes, ontological similarities can also persist in the light of disparate practical concerns. The reason is that categories are anthropic to different degrees and ethnosciences often also include categories that remain stable in the contexts of very different purposes. In this sense, Weiskopf's (2018) account of anthropic categories can be complemented with Franklin-Hall's (2015) account of natural kinds as "categorical bottlenecks […] that not only best serve us, with our idiosyncratic aims and cognitive capacities, but also those of a wide range of alternative agents." The simultaneous presence of (and the continuum between) anthropic and bottleneck categories provides a model for understanding empirical findings of partial ontological overlaps. For example, think of an Indigenous hunter and conservation scientist. While there may be some overlap in practical purposes (e.g., shared interest in monitoring population size of a hunted species), there are also plenty of differences in concerns that generate differences between ontologies. At the same time, some categories

such as salient mammal species may exhibit a strong bottleneck character in the sense that heterogeneous actors will largely agree on the boundaries even in the light of highly diverse practical interests.

The interplay between anthropic and bottleneck categories provides an epistemological model for understanding partial overlaps but can be supplemented by a *metaphysical* discussion of the structural grounds of anthropic and bottleneck features. Anthropic characteristics of categories require recognition of the heterogeneity of properties and patterns in the natural and social world that allow the construction of different ontological systems (Ludwig, 2018b; Weiskopf, 2018). For example, Indigenous soil categories can reflect patterns of properties that are highly relevant for local agricultural practices such as suitability for certain crops, occurrence of relevant weeds, morphological features that allow identification (soil color, amount of gravel, etc.), and chemical properties that underlie both morphological features and agricultural suitability. Even if this pattern is highly salient and relevant for an Indigenous farmer, a Western soil scientist may build her ontology along different properties and relations and therefore end up with very different distinctions between soil categories.

At the same time, properties may cluster in stable ways that ground the suitability of categories for different purposes, and therefore ground the bottleneck character of some categories (Boyd, 1999; Slater, 2015). For example, consider *jaguar* as a distinct category that is recognized by Indigenous communities across the Americas as well as Western taxonomists. Jaguars are clearly distinct from any other Felidae in the Americas along a large variety of criteria such as morphology, phylogenetics, behavior, or ecological roles. An Indigenous hunter and a Western taxonomist may therefore pay attention to very different properties (say animal behavior vs. genetic features) and still end up recognizing jaguars as distinct from other cats in the Americas such as pumas, bobcats, or ocelots. The scope and stability of property clustering therefore allows the formation of bottleneck categories that contribute to cross-cultural ontological stability despite heterogenous practical purposes.

To sum up, empirically informed ethnoontology requires a complex story about the relations between ontologies beyond simple universalist and relativist models. As summarized in Figure 1, such a complex story can be told along descriptive, epistemic, and metaphysical levels. On the descriptive level, cross-cultural evidence requires acknowledgement of "partial overlaps" that include common ground in converging categories as well as diverging elements that lead to distinctly local ontological systems. On the epistemic level, partial overlaps can be connected to the "anthropic" and "bottleneck" characters of categories that result in different degrees of purpose dependency. On the metaphysical level, these epistemic features can be explained through the scope and stability of property clusters that make the categories more or less dependent on the presence of certain purposes.

4 | A SYSTEMS MODEL OF ONTOLOGY BUILDING

A model of partially overlapping ontologies provides a helpful starting point for relating ontological systems across cultures but also raises further questions about different practices of ontology building. Research in fields such as ethnobiology, ethnoecology, and ethnomedicine tends to be highly interdisciplinary and brings together evidence from diverse disciplines such as biological taxonomy, cognitive psychology, cultural anthropology, and political ecology. At the same time, this interdisciplinarity has also been a source of tension between researchers from different intellectual traditions who approach ontology building through the lens of heterogeneous and sometimes competing methodologies. For example, there is substantial research from both natural and social sciences that involves both quantitative and qualitative methods (ethnographic documentation, biological surveys, controlled psycholinguistic experiments, etc.) and often raises contentious issues such as the role of decolonial and other political projects in scientific research. At least heuristically, one can distinguish between four different centers of attention in debates about ontology building in the ethnosciences.

First, there is a long tradition of objectivist perspectives in ethnosciences that focus on "discontinuities in nature" (Hunn, 1977) in the sense of empirically discovered property clusters. In this tradition, ontology building is primarily understood as a process of empirical discovery, even as a proto-scientific enterprise, and cross-cultural convergence is emphasized as the outcome of joint recognition of the same material discontinuities in the natural world (Berlin,

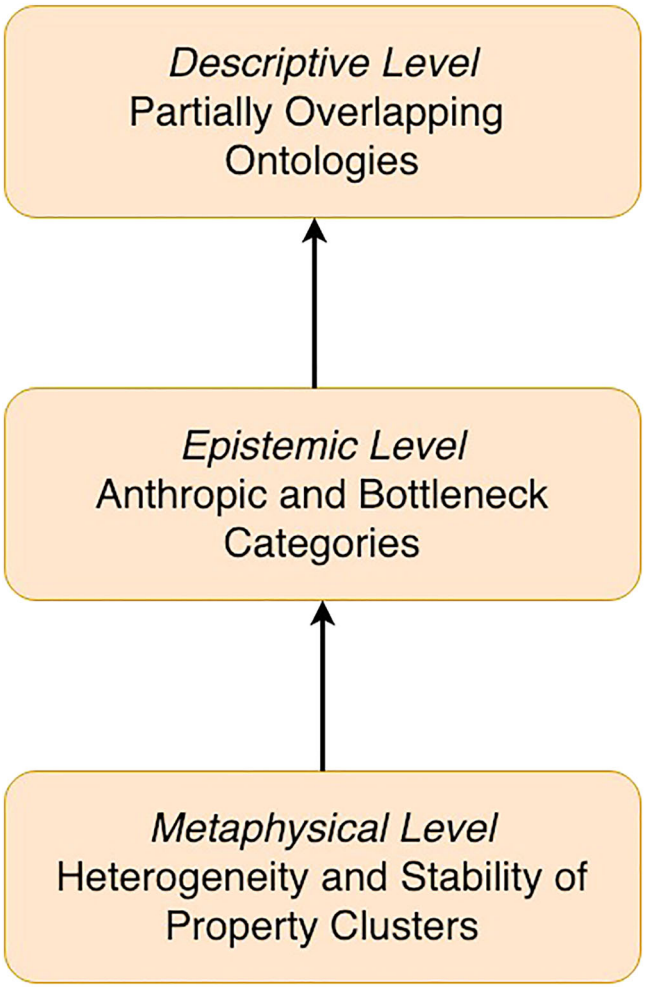

FIGURE 1 137 × 212 mm (72 × 72 DPI)

1992). Ethnobiological frameworks in the second half of the 20th century (see Hunn, 2007, for a historical overview) often integrate seamlessly into philosophical frameworks of ontological realism (Sider, 2011) that postulate one metaphysically privileged strategy of carving nature at its joints that is recognized across otherwise highly diverse cultural contexts.

Second, cognitivist perspectives (Atran, 1990, cf. Ludwig, 2018a) emphasize shared cognitive processes in perceiving and categorizing the natural world. Objectivist and cognitivist perspectives share a focus on cross-cultural similarities in ontology building but the latter shifts the explanans at least partly from the external world into the mind by emphasizing universal aspects of human cognition such as shared standards of perceptual salience or even highly specialized cognitive modules. For example, Atran and Medin (2007) argue for a universally shared folkbiological module that shapes ontology building across cultures and therefore constrains cross-cultural variation. In a similar vein, psychological essentialists (Gelman, 2003) argue that natural, social, and artifactual categories are cognitively organized around intrinsic, often internal causal–explanatory features, and that this explains numerous facts about human categorization cross culturally and developmentally.

Third, culturalist perspectives approach ontology building as a distinctly local practice and often contrast with cognitivist accounts in emphasizing that ontologies are shaped by sociocultural factors ranging from economic concerns to spiritual significance. Cultural anthropology emphasizes the embeddedness of ontology in wider patterns of life, such as everyday rituals for handling food or preparing weapons, constructing habitats or decorating bodies, and

systems of organizing social relations (Wagner, 1981). Accordingly, ethnotaxonomic studies often identify highly specific cultural factors in ontology building. For example, Bulmer's (1967) classic discussion notes the spiritual relations between cassowaries and humans in Papua New Guinea as a core factor in the exclusion of cassowaries from the bird category of the Kalam people.

Fourth, the increased recognition of Indigenous activism and political ecology in ethnosciences has contributed to an emphasis on ontology building as a process of political negotiation and contestation (Chao, 2018; Ludwig, 2016). As ontological differences often express different purposes and values, preservation of Indigenous and other local heritage can also become a matter of preservation of ontological difference. Furthermore, collaboration between different actors like local communities and academic researchers often raises questions about the role of different ontologies in practice and policy. The clearest articulation of such a political reading of ontology building is Viveiros de Castro's (2014) notion of "ontological self-determination" that frames justice for Amazonian communities in terms of keeping Indigenous control over local ontologies.

While it is possible to locate different points of emphasis in the ethnoscientific literature, the heterogeneity of local categories suggests that none of them can provide a comprehensive model in isolation. First, different case studies suggest that emphasis on different factors as some categories requires attention to material factors or general cognitive processes while others will illustrate distinct forms of cultural interpretation or political contestation. For example, consider biological categories: some mammal taxa such as *jaguar* will require emphasis on cross-culturally recognized discontinuities, while other categories such as *tree* invite reflection on human perception. Yet others such as Bulmer's *cassowaries* demand attention to local cultural dynamics.

Furthermore, cultures do not come divided up into neatly separable components. Consequently, all four dimensions tend to interact with each other in the formation of local categories. For example, think of landscape categories that reflect (a) material topographical features and (b) general factors of perceptual salience but also (c) distinct cultural interpretations such as the Aboriginal use of landscapes for navigation and (d) political questions about the preservation of local categories as a prerequisite for the preservation of a group's historical memory and ways of life. As summarized in Figure 2, ontology building therefore has to be understood through interaction of all four factors and their shifting importance depending on the category in question.

5 | LOCATING ETHNOONTOLOGY IN PHILOSOPHICAL ONTOLOGY

Ethnoontology challenges philosophers to engage with complex ethnographic evidence beyond classical thought experiments such as "gavagai" and anecdotes such as "Eskimo words for snow." Why should philosophers accept this challenge of engaging with the cross-cultural complexity of ontological systems rather than addressing ontological questions through more traditional methods such as thought experiments involving carefully constructed possible worlds? In conclusion, we provide both an internal and an external reason for philosophers to embrace ethnoontology.

First, ethnoontology can advance ontological debates in philosophy by challenging theorists to reflect on the empirical complexity of ontological systems. For example, consider debates about natural kinds and essentialism in the context of the heterogeneous web of cross-cultural similarities and differences between ontological systems. The four-factor model sketched here suggests that the cultural construction of categories will not center on essential internal property clusters, but rather incorporate wider sets of roles and relations, both practical and symbolic. Indeed, given the cross-cultural prevalence of transformations that transgress ontological boundaries, it is unclear how widespread such essentialist beliefs themselves are. This is consistent with research showing cultural differences in the degree to which categories are essentialized and that essentialism can be a strategy deployed to serve a matrix of power relations (Astuti, 2007; Hale, 2015; Mahalingam, 2003; Olivola & Machery, 2014; Ryazanov & Christenfeld, 2018).

In philosophical discussions, natural kinds are the paradigmatic examples of essentialized categories. It is common, though, for social categories (race, ethnicity, and class status) to be "naturalized": that is, treated as if they were

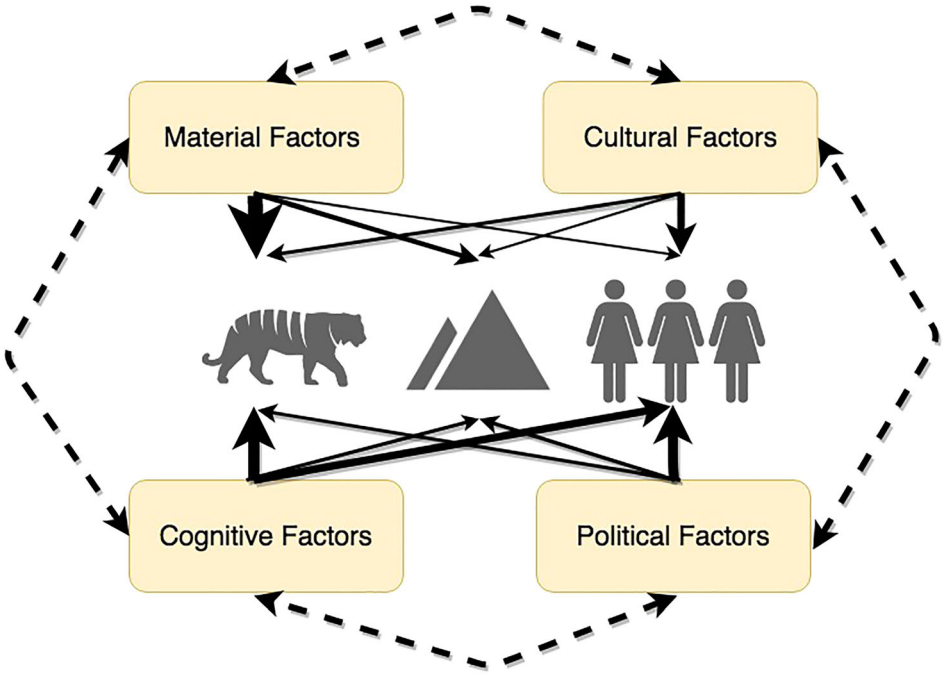

FIGURE 2 Categories of objects like species, landscapes, and social groups are shaped by different (cognitive, material, cultural, political) factors. The contribution of these factors (strength of the solid arrows) varies between categories. Furthermore, factors interact with each other (dotted arrows), requiring a systemic perspective on category formation (Ludwig, 2018c)

natural categories with intrinsic essences (Gil-White, 2001; Prentice & Miller, 2007). The ethnoontological perspective presented here suggests that the reverse process is also possible. Many "natural" kinds can be de-naturalized and treated as existing in relation to human social, economic, ritual, and evaluative practices. If this is true, then purely natural kinds may not be a default way of dividing up the world, but a relative rarity confined to contexts of highly regimented and self-conscious inquiry such as the sciences themselves. Ethnoontological research provides important resources to move beyond a simple divide between "natural" and "conventional" kinds (Ludwig, 2018a) towards empirically informed discussions about kinds that exhibit different degrees of causal unification (e.g., Khalidi, 2013) and are suitable for different epistemic purposes (e.g., Franklin-Hall, 2015).

For another example, consider debates about the role of non-epistemic values in ontology building. While many ontologists have acknowledged that ontologies reflect non-epistemic concerns (Conix, 2018; Ludwig, 2016; Mikkola, 2015), the four-factor model of ethnoontology can provide a much richer account of social concerns in ontology building while simultaneously acknowledging the importance of material and cognitive factors in the sense of Figure 2. Both debates about natural kinds and non-epistemic values illustrate how philosophical debates can benefit from engaging with the empirical complexity of ontology building across cultures. Indeed, contemporary science itself is, from this perspective, just another newly invented culture, and therefore not an exception to the general model presented here. In this sense, ethnoontology contributes to wider naturalistic approaches in ontology that "aim to learn from science's classificatory practices and offer a fuller understanding of those practices" (Ereshefsky, 2018) rather than developing ontological claims independently of empirical research.

Second, ethnoontology also contributes to more socially relevant ontological debates in nonacademic and global contexts. Indigenous and other local ontologies are not just philosophically intriguing but also a crucial component of practices and traditions that support the livelihoods of local communities. In this sense, local ontologies are an important part of local cultural heritage and questions about their roles become deeply political issues (Viveiros de Castro, 2014). For example, how should ontological differences be negotiated if they suggest different ways of relating to

environments and different ways of organizing conservation policy (Nadasdy, 2003)? How should concerns about ecological sustainability and the knowledge rights of traditional cultures be balanced against the desire to share the fruits of rich ethnomedical knowledge (Pushpangadan, George, Ijinu, & Rajasekharan, 2017; Voeks, 2018)? The study of ethnoontology presents an opportunity to address links between general issues in philosophical taxonomy and applied questions about pressing global challenges ranging from conservation of local environments to the self-determination of Indigenous communities (Ludwig & Poliseli, 2018).

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