2015 | Hau: *Journal of Ethnographic Theory* 5 (1): 35–57

The political economy of technofetishism

Agency, Amazonian ontologies, and global magic

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The ethnography of human–object relations in native Amazonia can help to illuminate the role of technological artifacts in modern society. Rather than abandon the categories of "subject" and "object" and of "Society" and "Nature," as suggested by proponents of "the ontological turn," anthropologists can compare subject–object transformations and the naturalization of social power relations in the two contexts. In native Amazonian animism the attribution of subjectivity and agency to artifacts often includes personhood and intentionality, while in modernity technological objects tend to be perceived merely as autonomous agents, but both these kinds of perceptions can be understood as statements about fetishized social relations. In the former case an external observer can conclude that the delegation of agency to artifacts is dependent on human consciousness, while it is generally believed that technology operates independently of human perceptions. However, in acknowledging the ultimate dependence of modern technology on exchange rates and financial strategies in a globalized economy, we realize that the agency of modern artifacts is also dependent on human subjectivity. In shifting the focus of comparative anthropology from ontology to political economy, we can detect that modern technology is a globalized form of magic.

Keywords: Amazonia, human–object relations, fetishism, ontological turn, technology, political economy, global magic

It has often been asserted that anthropology should be not only about understanding the lifeworlds and mindsets of other people, but ultimately about using such understandings to better grasp the cultural specificity of the *familiar*.[1] George Marcus

1. An earlier version of this text was presented as the keynote lecture at the IX Sesquiannual Conference of the Society for the Anthropology of Lowland South America, Gothenburg, June 28, 2014.

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ISSN 2049-1115 (Online). DOI: http://dx.doi.org/10.14318/hau5.1.003

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and Michael Fischer (1986) have called such a U-turn of the anthropological gaze "defamiliarization by cross-cultural juxtaposition." Since long before Bruno Latour (1993) launched the notion of a "symmetric anthropology," the ethnography of indigenous Amazonia has in many ways provided capitalist modernity with a mirror in which to discover its own idiosyncrasies and blind spots. In this paper I will reflect on what it can teach us about our relations to *things* (Santos-Granero 2009a). As Karl Marx realized through his own brand of "symmetric anthropology" in the mid-nineteenth century, human relations to things are always about relations to other humans. Applying a concept originally employed by Portuguese merchants to describe the "primitive" religious practices of West Africans, he referred to this as "fetishism."[2] Based on such a definition of "magic"—as the attribution of autonomous agency to artifacts, obscuring the role of human perceptions and strategies—I shall propose that modern, globalized technologies qualify as an example of this phenomenon.

To unravel how humans deal with artifacts is to unravel the specifics of social relations. I will argue that an analytical distinction should be recognized between two very different ways of delegating agency to artifacts, depending on whether such agency is contingent on subjective human perceptions or merely on the physical properties of the artifacts themselves, as in the case of simple tools. Following Marx's insight that artifacts perceived to have intrinsic or magical agency (i.e., fetishes) are pivotal components of political economy in both premodern and modern economies, I aim to show that the agency of modern technological objects is *not* intrinsic to those objects—and independent of human perceptions and deliberations—but that our belief that *this is indeed the case* is our way of distinguishing the modern from the nonmodern.

Although this may sound much like what Bruno Latour and other proponents of "the ontological turn" have been saying, my argument is in fact quite different, grounded as it is in political economy. Rather than take ontological differences as a point of departure, I propose that we investigate the political economic conditions that produce particular ontologies. This applies no less to ontological diversity among nonmodern societies—e.g., between indigenous Amazonia and the pre-Hispanic Andes—than it does to differences between the modern and the nonmodern. Political economy fundamentally concerns the social organization of human–object relationships, and thus ultimately how social agency is delegated to artifacts. Such a definition of political economy inevitably implicates our own cultural constructions of "technology" (cf. Pfaffenberger 1992; Hornborg 2001a, 2014a). In unraveling the difference between two kinds of artifactual agency—i.e., whether or not it is contingent on human subjectivity—we discover that the distinction between "subject" and "object" is much too significant to discard, if we want to understand how relations of social power are embodied in technologies. Paradoxically, although Latour's focus on artifactual agency is supremely valid, his aspiration to abandon subject–object distinctions presents an obstacle to analyzing the historical transformations of such agency. To unravel this paradox, I will need to discuss differences between some of the main protagonists of "the ontological turn" in anthropology (Bruno Latour, Philippe Descola, Eduardo Viveiros

2. For discussions of the Marxian theory of fetishism, see Hornborg (2001c, 2014a).

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de Castro, and Eduardo Kohn). Whereas Latour's rejection of subject–object distinctions is contradicted by his fellow "ontologists," Descola's structural analysis of ontologies is less concerned with the role of artifacts. These omissions mean that neither Latour's nor Descola's framework can in itself adequately account for historical transformations of political economies and their associated ontologies. Moreover, it will be evident that "the ontological turn," although an ambitious attempt to challenge the hegemony of mainstream Western science and technology, does not represent a coherent or unitary theoretical framework.

I offer these suggestions against the background of more than twenty years of deliberations on technological fetishism (Hornborg 1992, 2001a, 2001c, 2011, 2014a, 2014c), ecosemiotics (1996, 2001b), and the political economy of indigenous Amazonia and the Andes (2005, 2014b). Although these wide-ranging concerns are seemingly disparate, I hope to show how they converge in an alternative—and potentially more critical—understanding of human–object relations than that offered by proponents of "the ontological turn."

Animism, perspectivism, and "the ontological turn"

To trace the emergence of the contemporary preoccupation with ontology, I will begin by going back some twenty years to June 1994, when, according to Signe Howell, the organizers of the third meeting of the European Association of Social Anthropologists, in Oslo, were taken by surprise by the unexpected interest in the "outmoded" theme of *ecology*. Two years later, Philippe Descola and Gísli Pálsson (1996a) gathered several of the papers presented in Oslo in a Routledge volume called *Nature and society: Anthropological perspectives*. The prominence of Amazonia in these deliberations was very obvious, represented by classical papers by Philippe Descola, Laura Rival, and Kaj Århem. What most of the papers in the volume had in common was an understanding that the conventional nature–society or nature–culture dichotomy so prominent in European thought can generally not be identified ethnographically among indigenous, nonmodern populations in, for example, Amazonia, Southeast Asia, or Oceania. Some papers, frequently citing Latour, also addressed recent trends toward blurring the nature–culture opposition in contemporary science, prompting the editors to ask whether this will "imply a redefinition of traditional western cosmological and ontological categories" (Descola and Pálsson 1996b: 2). No longer simply relegating concerns with a modernist concept of ecology to the margins, constructionist and culturalist approaches in anthropology were now prepared to apply their perspectives to human–environmental relations and to "nature" itself.

The papers assembled by Descola and Pálsson in 1996 were foundational to the wide-ranging discussions on animism, perspectivism, and human–environmental relations that have preoccupied so many anthropologists since then. Descola's (1996) structural analyses of what he calls "the social objectivation of non-humans" as "a finite group of transformations" have developed into canonical volumes such as his *Beyond nature and culture* (2013), characterized in the foreword by Marshall Sahlins (2013) as "a comparative anthropology of ontology" and nothing less than "a paradigm shift." Descola's quadripartite typology of ontologies— naturalism, animism,

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totemism, and analogism—is elegantly generated by the logical intersection of two parameters: here, continuity versus discontinuity in the representations of "interior" versus "physical" aspects of existence. However, Sahlins (2014) has suggested that Descola's categories totemism and analogism ultimately are merely two varieties of animism, with all three categories founded on a general inclination toward anthropomorphism. This conclusion is congenial with my proposal, further on, that Amazonian animism and Andean analogism should be more closely related than Descola's analysis suggests. It also confirms that the crucial ontological distinction is that between animism and naturalism (cf. Descola 2013: 172), a matter to which I will also return. While Descola's empirically rich and theoretically sophisticated analysis is a magnificent account of global variation in humans' conceptualizations of their nonhuman environments, I shall suggest, in very general terms, how it might be complemented with perspectives linking such conceptualizations to political economy.

Århem's (1996) chapter in *Nature and society*, "The cosmic food web," which elucidates the ecocosmology of the Makuna, was a significant source of inspiration for the model presented by Eduardo Viveiros de Castro (1998) in his celebrated article on Amerindian perspectivism in the *Journal of the Royal Anthropological Institute*. Judging from the extent to which the perspectivist model has been adopted and endorsed by other anthropologists, it has had an irresistible appeal to our profession. I suspect that this appeal reflects not only how impressed we are by the elegant cognitive twists of structuralist methods, but even more so the way the model enlists indigenous cosmologies to challenge the mindsets of capitalist modernity. To find, in the indigenous Other, the diametrical inversion of the civilization that many of us deplore is arguably a hallmark of much anthropology. The perspectivist model continues to haunt us, perhaps because it recognizes the possibility of acknowledging, in general terms, the subjectivity of all living things, which has been so bluntly repressed in modern society (cf. Kohn 2013).[3] It illuminates how Cartesian objectification of human and nonhuman Others is ultimately an act of moral *dissociation* (Hornborg 2014a).

Although closely related to Descola's understanding of animism, perspectivism was contrasted against the latter in a debate in Paris chaired by Bruno Latour in January 2009. Latour's (2009) brief review of the debate presents Descola's approach as the more traditional, preoccupied with ordering typological categories in a "cabinet of curiosities," whereas perspectivism to Latour represents a "bomb" aiming to explode the philosophical typologies ultimately deriving from Western colonialism. Even if Descola's (2013) classification of human ways of relating to nature includes scientific objectivism—he calls it "naturalism"—as merely one of four ontological options, Viveiros de Castro proposes an even more radical departure from the nature–culture dualism of conventional Western science: the complete dissolution of the notion of an objective, universal nature. Instead of assuming that there is only one nature, but many cultures, he argues, indigenous Amazonians hold—and he obviously thinks that we should take this assertion seriously—that

3. A fundamental constraint of the perspectivist approach, however, is that it will always remain confined to human representations of nonhuman perspectives. It will never be able to say anything specific about how nonhumans actually experience the world (cf. Descola 2014: 272).

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there is only one "culture" (or spirit, or soul), but many natures—many different material, bodily forms united by a single and shared form of subjectivity.

Descola's and Viveiros de Castro's challenges to Western science are enthusiastically endorsed by Latour. Latour's own work has addressed topics generally classified as Science and Technology Studies (STS), but he often presents his influential deliberations on the philosophy and sociology of science as anthropology. Alongside Descola and Viveiros de Castro, he personifies what is now being called "the ontological turn" in anthropology. Although considerable efforts are being made to persuade the anthropological profession that this "turn" indeed represents a significant shift away from whatever anthropology used to be, it is not altogether easy to grasp what the professed shift is all about (cf. Vigh and Sausdal 2014). Part of the confusion derives from Latour's contradictory notion of "assemblage," which suggests that the very material, nonhuman phenomena whose agency he wants us to acknowledge can only be said to *exist* in terms of how humans perceive them (Elder-Vass 2015).[4] But much of the confusion regarding "the ontological turn" stems from significant differences between the main protagonists. For instance, whereas Latour completely rejects the subject–object distinction, it has been explicitly fundamental to Viveiros de Castro's (1999) concerns, and implicitly also to Descola's (2013) focus on "interiorities" versus "physicalities." The issue has important implications for our capacity to distinguish between the agency of living organisms and that of abiotic things (cf. Kohn 2013), more specifically between the agency of humans and that of artifacts.[5]

4. Elder-Vass' (2015) critique of Actor-Network Theory exposes its self-contradictions with regards to anthropocentrism and the existence of phenomena beyond human discourse. Condemned by his own propositions to continuous self-reference, Latour's deliberations can make no claim to account for the specific ways in which nonhuman physical forms assume the role of "actants" that is not constrained by his own particular vantage-point. But to be compelled to include the human observer-participant in every attempt to represent something (whether human or nonhuman) is unfeasible. To posit, where applicable, a recursive (i.e., mutually constitutive) *relation* between reference and referent—"the knower and the known" (cf. Hornborg 1996: 52)—is not equivalent to positing their *conflation*.

5. In a rejoinder, Latour (2014) clearly does not agree. There is a widespread failure in anthropology to distinguish between human claims that abiotic things—such as sacred mountains or mummified ancestors—are animate, on the one hand, and the issue of whether they are actually alive, on the other. To respect such claims as statements about human sentiments and relations should not be confused with skepticism vis-à-vis biological (or semiotic) definitions of life (cf. Kohn 2013, 2014). Assertions that a mountain is animate may be understood as an appropriate counterbalance to the equally fetishistic claim that a corporation is a *person* with autonomous intentions and interests (Martin 2014: 107), but we should be aware that we are talking about human sentiments and relations rather than actually attributing personhood to geological formations. It will require profoundly humanist (rather than "posthumanist") convictions in order to establish sensitive and sustainable relations to the remainder of the biosphere. This will entail enhancing our extraordinary human capacity for subjectivity, rather than regressively reducing ourselves to equivalents of rocks and tools.

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If, as Latour (2005, 2010) has suggested, we are mistaken to think that there is such a thing as "society," "capitalism," or "fetishism," how could his approach help us theorize *power*? The answer should no doubt be sought in his general approach to artifacts. In a paper coauthored with primatologist Shirley Strum in 1984 (Strum and Latour 1987), Latour observes that the key difference between the sociality of baboons and that of humans is that human relations can be anchored to partially independent and fixed points of reference beyond the body, such as language, symbols, and—importantly—material objects. Although this is hardly a new observation (i.e., that humans distinguish themselves by the extent to which they use language, symbols, and artifacts), Latour's perspective on the agency of artifacts—apparently emerging from his early studies in primatology—encourages us to reconsider the role of specific properties of artifactual assemblages in generating specific varieties of human social organization. An implication of such a stance should be that the power asymmetries addressed in studies of political economy should be possible to trace to specific kinds of human–object relations.

Artifacts, ontology, and political economy in indigenous South America

If, to a large extent, artifacts (including technologies) are indeed the substance of increasingly complicated human social relations, Latour's preoccupation with their agency within hybrid networks or assemblages is incisive. It raises questions that are central to Amazonian ethnography and the mirror it provides for capitalist modernity. What is the relation between materiality, sociality, and imagination? Or, differently phrased, what is the relation between political economy, magic, and myth? As Santos-Granero (2009b: 19) has implied, the role of artifacts conceived of as powerful agents would no doubt be a key to understanding sociopolitical organization in the more hierarchical societies—or, to use an expression from Stephen Hugh-Jones (2009), more "opulent object regimes"—known to have existed in precolonial Amazonia. Archaeologists speak of "prestige-good systems." Prestige goods such as green-stone amulets (Boomert 1987), shell beads (Gassón 2000), snuff trays (Torres 1987), and feather headdresses (Basso 2011) appear to have been widely circulated in precolonial Amazonia, and their significance for regional social organization, hierarchy, and power should not be underestimated (cf. Hornborg 2005).

The precolonial transformations of Amerindian societies into chiefdoms, states, and empires, like those encountered by Spaniards in the Andean highlands, hinged on the political economy of prestigious and fetishized artifacts such as the *Spondylus* shells imported from coastal Ecuador (Salomon 1986; Hornborg 2014b). The Thorny Oyster or *Spondylus* generally occurs naturally not much further south than the Gulf of Guayaquil, but was in high demand throughout the Andean area for millennia before the Spanish conquest. Whether in the form of intact shells or fashioned into ornaments, beads, or powder, it has been discovered in a number of archaeological sites, ranging from coastal Peru around 2500 BC to Inca-period sacrifices on high peaks in the southern highlands (Paulsen 1974; Pillsbury 1996; Carter 2011). Ethnohistorical sources indicate that *Spondylus* symbolized fertility and water and that one of its primary uses was as offerings to the gods to ensure

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good harvests (Salomon and Urioste 1991; Blower 2000). Access to items derived from *Spondylus* provided the lords of pre-Hispanic Andean theocracies with a means of claiming prestige and honor in proportion to harvests, and thus to establish claims on the labor of their dependant peasants. The social and political agency of these small but highly valued fetishes was thus formidable. Much like money in our contemporary world, they integrated vast imperial hierarchies ultimately because most people believed in their magic.

The cultural continuities linking Amazonian and Andean societies have intrigued a number of anthropologists working on both sides of the *montaña*, including Lévi-Strauss. The difference between Amazonian animism and Andean analogism identified by Descola (2013) can no doubt be illuminated by focusing on historical transformations in the political economy of human–object relations in the two regions. We may begin by asking what the relationship is between ontology and political economy. The fifteenth-century capacity of *Spondylus* shells to mobilize thousands of Andean peasants was contingent on how they were subjectively perceived; their (symbolic) agency was thus distinctly different from the technical impact of other Inca artifacts such as the foot-plow or backstrap loom. In making this difference invisible, a dissolution of the subject–object distinction would also conceal the huge potential for intensification and centralization inherent in what we might call ritual or symbolic technologies. The amount of work that can be accomplished with a foot-plow or backstrap loom per unit of time is limited by the energy and skill of the laborer, but the amount of work that can be mobilized by a gift or sacrifice of *Spondylus* is limited only by human credulousness. The pre-Hispanic ontology of *Spondylus* was thus inextricably intertwined with political economy.

Descola (2013: 268–80) uses Nathan Wachtel's ethnography of the Chipaya in highland Bolivia as representative of the analogism he identifies as prevalent throughout the Andes at least since the Inca Empire. Their dual organizations and quadripartitions are repeated at every level of inclusiveness, organizing society and the cosmos as a consistent, fractal hierarchy that pervades both human and nonhuman domains. As Descola (2013: 202) suggests, the obsession with resemblances in such stratified societies is a way of making a world of "infinitely multiplied" differences intelligible and meaningful, but we also need to ask how those differences were generated that needed to be made meaningful. In the current context, this means asking how the social organization of artifacts and human–object relations in the precolonial Andes could generate vast imperial hierarchies among populations who adhered to a fundamentally egalitarian and reciprocal cosmology. The archaeological reconstruction of the emergence of so-called "prestige-good systems" addresses precisely this issue: how the expanded circulation of subjectivized artifacts generated new and more hierarchical forms of social organization in prehistory. The political economy of fetishized valuables was a crucial foundation of Andean civilizations (Hornborg 2014b). It is reasonable to hypothesize that such human–object relations have emerged from relations similar to those that are currently being investigated in the less hierarchical indigenous societies of contemporary Amazonia (Santos-Granero 2009a). Rather than understand the difference between Amazonian animism and Andean analogism as an essentialized contrast in worldview or ontology, the challenge for anthropology should be to account for the difference in terms of historical transformations of social organization.

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Indigenous Andean and Amazonian societies have experienced quite divergent postconquest trajectories: while Andean communities have remained integrated in the large-scale colonial hierarchies that replaced the Inca Empire, Amazonian groups have been more thoroughly victimized by depopulation and societal fragmentation. However, archaeological investigations in various parts of Amazonia indicate that, prior to exposure to European colonialism, the region was home to densely settled and hierarchical polities that were no doubt comparable to those of the Andes (for an overview, see Hornborg 2005). Extensive areas of raised fields, anthropogenic soils, and earthworks testify to the precolonial existence of complex sedentary societies in various parts of the tropical lowlands (Balée and Erickson 2006; Schaan 2012). Although most of the prestige goods that circulated in and between these polities would have been perishable, there are archaeological indications of long-distance trade in items such as green-stone amulets, shell beads, and snuff trays (Boomert 1987; Gassón 2000; Torres 1987). As Santos-Granero (2009b:19) has implied, the contemporary uses of "subjectivized" artifacts among indigenous groups in Amazonia may represent fragmented echoes of precolonial political economy. The agency of such subjectivized artifacts (or fetishes, in Marxian parlance) was no doubt as significant for ancient Amazonian social organization as *Spondylus* shells were for polities in the pre-Hispanic Andes. If, as Descola (2013) proposes, "analogist" ontologies have emerged to reconcile the myriad differences of stratified premodern societies, the distinction between Amazonian animism and Andean analogism cannot be a timeless, essentialized one, but is no doubt a postconquest divergence of societies that once belonged to the same continuum. It reflects a difference in degree of hierarchization, but not a difference in the fundamental character of human–object relations.

In considering what "the ontological turn" might have to contribute to our understanding of such historical transformations, we are struck by two conspicuous omissions in the respective frameworks of Latour and Descola. Latour rejects a distinction between the agency of living subjects and that of abiotic artifacts (cf. Kohn 2013: 91–92), and he would thus no doubt also reject a distinction between forms of artifactual agency based on whether or not they are contingent on human subjectivity. Descola, on the other hand, appears to accept subject–object distinctions, but demonstrates little concern for the role of artifacts and human–object relations in generating different ontologies. In offering an alternative perspective on the political economy of globalized technologies, I shall (selectively) retain Latour's observations on the pivotal role of artifacts in human social organization and Descola's acknowledgment of subject–object distinctions.

If Sahlins (2014) is correct in suggesting that the essential distinction between divergent ontologies can be reduced to that between naturalism and animism, I will next try to show that naturalism is closely related to the emergence of new forms of fetishism that were fundamental to the Industrial Revolution in eighteenth-century Europe. Although naturalism has been represented as a transcendence of premodern, local magic, its approach to the agency of technological artifacts is associated with a different, globalized form of magic. Its ontological foundation is the abandonment of relationism, as illustrated by the assumption that objects (e.g., organisms, machines) can be fully understood through analysis of their bounded, material forms, detached from the relations that generate them.

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Keys and coins: Technology, magic, and the significance of human subjectivity

I propose that the distinction between premodern and modern hierarchical societies hinges on the different roles of human subjectivity in the kinds of human–object relations that characterize the two contexts. If material objects are mobilized as agents in systems of socioecological relations, I suggest that we reflect on the difference between their capacity to operate *without* the mediation of subjective human perceptions, on the one hand, and their capacity to operate *by means of* such mediation, on the other. This difference is fundamental to the way we conventionally distinguish between technology and magic.

I hope to show that technology is our own version of magic. In this sense, I agree with Latour (1993) that "modernity" is not a decisive break with premodern ontologies. The Enlightenment demystification of premodern magic and "superstition" was not a final purge of reliable knowledge, but a provisional and politically positioned one. Its understanding of the nature of economic growth and technological progress has been a successful instrument of predatory expansion for core regions of the world-system for over three centuries, but the multiple crises currently faced by global society are an indication of the approaching bankruptcy of this worldview. The components of this failing ontology that seem most imminently in line for collapse are its understandings of money and technology—two kinds of fetishized artifacts widely imagined to have autonomous agency.

A prominent role of science is to represent technological progress as "natural," as if capitalist expansion was founded exclusively on innovative discoveries of the "nature" of things, and as if the social organization of exchange had nothing to do with it. Constrained by our Cartesian categories, we are prompted by the materiality of technology to classify it as belonging to "nature" rather than to "society." The post-Cartesian solution to this predicament, advocated by proponents of "the ontological turn," would be to abandon the categories of "nature" and "society" altogether (cf. Latour 1993). Descola (2013: 82), for instance, rhetorically asks, "where does nature stop and culture begin" in an increasingly anthropogenic biosphere. But, I would caution, to acknowledge that nature and society are inextricably intertwined all around us—in our bodies, our landscapes, our technologies—does not give us reason to abandon an *analytical* distinction between aspects or factors deriving from the organization of human society, on the one hand, and those deriving from principles and regularities intrinsic to the prehuman universe, on the other. For example, the future of fossil-fueled capitalism hinges on the relation between the market price of oil and the Second Law of Thermodynamics, but I cannot imagine that we have anything to gain from dissolving the analytical distinction between the logic of the world market and the laws of thermodynamics.

How can the ethnography of native Amazonia help us to expose and transcend modernist illusions? I believe that to understand Amazonian ontologies in terms of how artifacts are incorporated into the social organization of subject–object transformations can shed light on the specific way in which modern people tend to perceive the agency of their technology. Descola (2013: 405) concludes his book *Beyond nature and culture* with the assertion that "it would be mistaken to think that the Indians of Amazonia, the Australian Aboriginals, or the monks of Tibet

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can bring us a deeper wisdom for the present time than the shaky naturalism of late modernity." I agree, of course, that their ontologies cannot be transferred and applied to the predicaments of modern life, but I am convinced that a familiarity with the different ways in which humans can relate to material artifacts increases our capacity to critically scrutinize our own constructions of technology. In fact, I suspect that crosscultural variation in the way humans relate to artifacts could also be analyzed structurally and typologically as "a finite group of transformations," much as Descola has done regarding what he calls "the social objectivation" of nonhuman nature. One parameter to investigate might be various modes of understanding the relations between objects and the metabolic flows which generate them. Other parameters might include modes of understanding artifactual agency: whether it requires human delegation, whether it presupposes human beliefs, and whether it implies personhood and intentionality or merely posits soulless causation.

A tenacious illusion of Enlightenment thought is that a boundary can be drawn between material forms and the relations which generate them, and that it is only the latter that can be contested, negotiated, and transformed. I think this kind of distinction—the reification of *things*—is more problematic than the distinction between "natural" and "societal" aspects. It is the essence of fetishism. The "moderns" generally perceive tangible objects as given, and as separate from the invisible networks of relations in which they are embedded. Such distinctions alienate humans from nonhuman nature as well as from the products of their labor, because both are perceived as categories of autonomous objects rather than as manifestations of relations. What our technological fetishism obscures from view is that it is as misleading to imagine machines as independent of global price relations and resource flows as it is to imagine organisms as independent of their environments.

How do we deal with the role of human perceptions in granting agency to "things"? To illustrate the second set of parameters I mentioned, it will suffice to acknowledge that both *keys* and *coins* have been delegated agency, but of different kinds. Such little pieces of metal can be crucial in providing access to resources, whether by physically opening doors, or by social persuasion. The way these metal objects are shaped—whether as keys or coins—has for centuries determined whether they operate as technology or through magic.[6] Coins and keys illustrate how social relations of power are delegated in different ways to material artifacts. They exemplify how such delegation can either be dependent on, or independent of, subjective human perceptions. They thus make very tangible the distinction that John Maynard Keynes long ago made between "organic" and "atomic" propositions, the truth of the former depending on "the beliefs of agents," whereas the truth of the latter is independent of any such beliefs (Marglin 1990: 15). It is with this distinction in mind that I would now like to compare the operation of modern technologies with native Amazonian uses of artifacts, as elucidated in Fernando Santos-Granero's (2009a) edited volume on *The occult life of things*.

6. Significantly, the invention of the slot machine enabled even coins to assume technological functions, alongside the magic that Marx called "money fetishism": when we buy a Coke or enter a public bathroom, we might reflect over the fact that magical objects can be converted into technology.

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Objectification and subjectification: Human–object relations in Amazonia

First, some general observations on human–object relations that are made in that useful volume. Stephen Hugh-Jones (2009) observes that although native Amazonia has generally been characterized as "object poor," there is considerable variation in time and space, and different peoples have quite different "object regimes." For example, the Barasana recognize an important category of valuables that signal group identity and social rank, and the northwest Amazon as a whole, like the upper Xingú, is known for "the intense circulation of ritual objects and ordinary possessions" (ibid.: 35). Joana Miller (2009: 76) similarly observes that, in "regions where they are involved in wider trade and exchange networks," objects produce distinctions within or between social groups, and Terry Turner (2009: 162) shows how traditional Kayapó valuables are passed on over the generations as tokens of social identity. These observations contrast, for example, with those of Philippe Erikson (2009: 177) among the Panoan-speaking Matis, for whom "all artifacts are conceived of as an extension of their maker, and as such, as 'inalienable' extensions of their person." As several of the chapters suggest, the extent to which possessions are alienable from their owner can be expected to be reflected, in related ways, in separate contexts such as the propensity to exchange them and their disposal in connection with funerals.[7]

Erikson (2009: 183–88) suggests, like Luiz Costa and Carlos Fausto (2010), that the widespread Amazonian concern with "mastership" or "control" over humans, animals, and plants also applies to artifacts. This Amerindian "idiom of power" evoking master-ownership, engendering, and protection organizes relations between hunters and their game, warriors and their enemies, chiefs and their followers, shamans and spirits, humans and pets, and parents and children, as well as between persons and things. It is in fact as evident in the relation between the Inca emperor and his *yanacona* servants as in the relation between captors and captives in Santos-Granero's (2009c) fascinating survey of Amerindian slavery. A central component of this pervasive notion of mastership is the capacity to *dispose* of persons and things. Much as when David Graeber (2011b) argues that the sovereignty of the modern consumer over his or her commodified objects is modeled on the sovereignty of the medieval monarch over his or her subjects—as both represent an urge to destroy in order to gain recognition and identity—we find once again that human relations to *things* are about relations to other human (or nonhuman) beings. Graeber's reflections on the modern concept of "consumption" as based on the metaphor of eating—the perfect idiom for destroying something while literally incorporating it—are strangely familiar to Amazonianists routinely discussing native concepts of "predation" as incorporation. In both modern and native Amazonian cosmologies, it seems, incorporation is fundamental to identity.

Another reflection stimulated by these illustrations of how power over objects is in fact power over other subjects concerns the very widespread Amerindian myth about the "revolt of the objects" (Santos-Granero 2009b: 3). While reading Jeffrey

7. Among the Matis, the reluctance to engage with artifacts manufactured by others is clearly related to their historical experience of epidemics introduced by outsiders (Erikson 2009: 179).

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Quilter's (1990) article in the first issue of *Latin American Antiquity* on the identification of this myth in iconography from the ancient Moche culture (AD 200–700) on the north coast of Peru, and looking at the detailed depictions of animated artifacts battling with their human makers, I couldn't help thinking of Hollywood productions like *Terminator*. The attribution of agency and subjectivity to artifacts obviously has the potential to rouse fears that the objects will assume power over their makers. Common to the mythological "revolt of the objects" and *Terminator* is the fear of an inversion of the social relations of power. The latter case seems to reflect the highly ambivalent fascination with technology on which capitalist modernity is built, but the way it deals with subject–object transformations can be viewed in a new light when illuminated by the social life of artifacts in native South America. Moche iconography from the middle of the first millennium AD clearly illustrates that subject–object distinctions were far from insignificant for precolonial Amerindians.

The main theme running through *The occult life of things* is how objects are attributed with subjectivity. The concepts "subject" and "object" are of course highly contested modern categories, but any attempt at crosscultural comparison will require an explicit baseline of such fundamental categories through which particular lifeworlds can be compared. Without the cognate terms "interior" versus "physical" as baseline, for instance, Descola's (2013) comparative analyses would have been impossible. It is one thing to observe the psychological, social, and indeed quite material consequences of *perceiving* certain objects as subjects, and another to account for such *perceptions* in terms of the observer's own assumptions about what subjects and objects actually *are*.[8] Beyond human perceptions, there are *objectively* biotic versus abiotic entities, and any attribution of agency or personhood to abiotic objects—whether by Amazonians or by Science-and-Technology scholars—should be understood as a statement about fetishized social relations.[9]

Much as Viveiros de Castro's (1999) seminal analysis of indigenous Amazonian ontology, Santos-Granero's (2009a) collection of perceptive ethnographies is couched in the inescapable, naturalist language of "subjects" and "objects." The "animist" perception of all living things as subjects is perfectly compatible with the perspective of *ecosemiotics* (Hornborg 1996, 2001b; Kohn 2013), but I would argue that the attribution of subjective agency to abiotic artifacts is more correctly classified as fetishism (cf. Gregory 2014). Whether we are confronted with the nonmodern "subjectivation" (Santos-Granero 2009b) of objects, or the claims of Actor-Network theorists, we need to retain the capacity to distinguish between sentient actors pursuing their purposes, on the one hand, and objects that simply have consequences, on the other. Kohn (2013: 91–92) thus pertinently criticizes STS for

8. Whether we are prepared to acknowledge them or not, we probably all do have such assumptions. For a convincing argument in this direction, see Heywood (2012: 146).

9. Chris Gregory (2014: 48, 62) notes that posthumanist attributions of agency or even intentionality to things are, "from a Marxist perspective, a classic example of fetishistic thought of an animistic kind," and "quite literally a form of spiritualism" that no humanist can accept. "For the humanist," he continues, such "assumptions are part of the problem to be explained in the current era of hypercommodity fetishism, not a solution to it."

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not distinguishing between the agency of sentient "selves" and the mere material "resistance" of abiotic things such as rocks or artifacts. The assertions of Actor-Network Theory about the agency of artifacts, combined with its dismissal of subject–object distinctions, are tantamount to fetishism (cf. Gregory 2014; Hornborg 2014a; Martin 2014).

It is symptomatic of "the ontological turn," however, that no one any longer seems to want to talk about fetishism (Goldman 2009; Latour 2010). The implicit assumption is that if objects are perceived as subjects, then *who are we* to suggest that it is an illusion? We are *all* fetishists, says Latour (2010). Yes, Marx said the same thing 150 years ago, but the crucial difference is that he wanted to *expose* fetishism in order ultimately to reject it. He observed that fetishism—the attribution of properties of living things to inanimate objects—could be a means of maintaining social relations of power and inequality. This does not seem to concern most Actor-Network theorists, whose arguments instead tend to amount to an *endorsement* of fetishism. It may be politically correct not to impute fetishism to others, but what is the bottom line of this argument if it simultaneously means denying us the chance of exposing our *own* fetishism?[10] It should be evident that I disagree with the general approach, expressed, for example, by Goldman (2009), of denying anthropology any other function than to communicate (and endorse?) non-Western ontologies.

In his lucid introductory chapter to *The occult life of things*, Santos-Granero (2009b) distinguishes various ways and contexts in which objects are attributed with subjectivity in Amazonian societies. He notes that some objects are conceived of as persons because they are attributed with a soul and a measure of agency, but agrees with María Guzmán-Gallegos (2009) that objects can be perceived as subjects even when they are not believed to have a soul, and that their agency does not necessarily imply intentionality. As we shall see, it is significant that these qualifications about soul-less subjectivity and nonintentional agency appear in a context where indigenous people are being engaged in the operation of capitalist modernity, quite reminiscent of Michael Taussig's (1980) account of the baptism of money.[11]

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10. This does seem an appropriate ideology for neoliberal social science (cf. Gregory 2014). The ideological bottom line of ANT is to shift political responsibility from humans to things (Martin 2014:105–7). Although offered as a joke, it is perhaps no coincidence that Latour (2005: 5) quotes Mrs. Thatcher's slogan, "There is no such thing as a society." A refreshing contrast is Kim Fortun's (2014) criticism of Latour's conceptual framework for disregarding the various environmental and medical externalizations that are inherent in "industrial logic." Although Michael Fischer (2014) largely follows Latour into esoteric language games, he similarly challenges him to address "the widening inequalities and devastations of our current cannibal economies, consuming the lives of some for the luxury of others" (ibid.: 349). The widely recognized inability of "ontological anthropology" to deliver political critique (Bessire and Bond 2014; Vigh and Sausdal 2014: 63) raises concerns over its official prominence at recent meetings of the American Anthropological Association.

11. Note that capitalist violence can also be represented as highly intentional, as illustrated by Santos-Granero and Frederica Barclay (2011) in their article "Bundles, stampers, and flying gringos."

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A recurrent phenomenon in native Amazonia is the notion that the subjectivity of objects is an extension of the people who made them, which of course recalls Marcel Mauss' ([1925] 1990) classic observations on "the spirit of the gift." As illuminated by Joanna Overing, Cecilia McCallum, Els Lagrou, and other ethnographers of Amazonia, artifacts and children are often viewed as analogous fabrications, both embodying the extended subjectivity of their makers. But objects can also become gradually "ensouled" through contact with their owners, whether or not the owner was also the manufacturer.[12] Some objects need the intervention of humans to activate their agency. The only objects that are recognized as completely inanimate are those with which no communication is possible. As Santos-Granero (2009b: 11) observes, "Some objects are just plain objects."

Viewed from within a particular human lifeworld, objects can be turned into subjects, and vice versa. Rather than discussing the conditions of subjects and objects as nouns, it is thus apt to consider them as *verbs*—as processes of "subjectivation" and "objectivation" that must be continuously attended to, through a myriad of practices, including shamanism, ritual, dieting, and daily routines. Such recurrent practices involve acts of subjectivation as well as desubjectivation, exemplified by the neutralization of potentially dangerous food, or the destruction of a dead person's possessions. As Harry Walker (2009) shows, even where potentially dangerous objects are allowed to maintain a measure of agency, they need to be "tamed" or "subjected."[13]

Technology as magic: Fetishism in capitalist modernity

Whereas modern people would generally consider the treatment of objects as personified subjects an illusion or fallacy (likely to be dismissed as superstition), while perhaps conversely challenging the objectification of subjects (such as animals or workers) as indicating a lack of empathy, native Amazonians take seriously the risks inherent in such subject–object transformations.[14] They are, in short, concerned with managing *relations*. Such a "relational epistemology," as Nurit Bird-David (1999) has called it, is indeed very different from the rigid subject–object dualism of modernity.

A fundamental paradox of capitalist modernity, which we can detect in this crosscultural mirror, is that its "naturalist" categories of subject and object are so

12. In a more recent paper, Santos-Granero (2013) shows that such notions of "ensoulment" are widespread also in Euro-American societies.

13. The potential dangers of eating insufficiently desubjectivized food are clarified in the distinction made by Carlos Fausto (2007)—building on the observations of Beth Conklin, Aparecida Vilaça, and others—between "cannibalism," defined as the appropriation of subjective aspects of other humans, and eating "familiarized" human remains.

14. Rather than dismiss all subject–object distinctions as symptoms of a false consciousness foundational to modernity, we need to understand them as statements about relations of power (cf. Martin 2014: 111). Fetishism can be understood as the attribution of power—the displacement of responsibility—to objects within networks of social relations where the political agency of humans is not apparent.

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irrelevant to the systems of relations that it organizes—that is, in terms of how subjects are *treated* and objects *understood*. Not only does it objectify both human and nonhuman subjects, and treat humans and nature accordingly; it is equally founded on an unprecedented subjectification of objects. I am not suggesting that objects are generally attributed with personhood, but some objects are attributed with an autonomous agency, which serves to mystify unequal social relations of exchange. As Marx observed, money is thus believed to generate more of its own kind, when deposited in bank accounts. Machines are believed to "produce" on their own account, regardless of the global price relations which make them possible, and which should prompt us to understand them as accumulations of embodied human labor and natural resources *where the money is*. Money and machines may not be "ensouled" *persons* in modernity, but they are certainly believed to have autonomous agency. We pride ourselves on having abandoned animism, but have organized a global society founded on fetishism. It is a fetishism which differs from pre- and nonmodern forms by restricting the subjectification of objects to imputing agency to them, rather than full personhood and intentionality, but it is fetishism all the same.

We are now in a position to draw more precise conclusions on the difference between capitalist modernity and native Amazonia in terms of how humans tend to subjectivize artifacts. The distinction between "magic" and "technology" that I have suggested corresponds to a distinction between societies founded on the energy of human labor, on the one hand, and societies founded on the use of so-called "exosomatic" energy (e.g. fossil fuels), on the other. Where political economy is about the social organization of human muscle power, people have to be *persuaded* to exert themselves for the benefit of those in power. "Magic" could be defined as the category of social strategies by which such persuasion is achieved.[15] For example, when the Inca emperor offered Ecuadorian *Spondylus* shell to the gods to ensure rain and agricultural fertility, it was incumbent on his many subjects to labor on his terraces and irrigation canals. We can now conclude that the efficacy of such ritual sacrifices was dependent on human perceptions. The pre-Hispanic agency of *Spondylus*, like that of modern money, was contingent on human subjectivity. But when modern farmers in an increasingly desiccated California resort to high-power water pumps to irrigate their fields, the efficacy of such practices is *not* perceived as dependent on human perceptions. The difference between "magic" and "technology," we tend to believe, is that the latter is a matter of increasingly sophisticated inventions based on discoveries about nonsocial nature, which grant our economies the capacity to grow on their own account.

But then, of course, neither did the peasants of sixteenth-century Peru believe that the efficacy of ritual sacrifices was dependent on human perceptions. The efficacy of all magic hinges on it being *perceived* as independent of human

15. This was convincingly argued by Alfred Gell, not least in his chapter on "The technology of enchantment and the enchantment of technology" (Gell 1992). I thank Denise Schaan for directing me to this text. Particularly interesting in this context is Gell's (1992: 62, n. 3) observation that modern technologies are cognate to magic in the sense that they tend to create illusions of "costless" production while displacing social and environmental "costs" elsewhere (cf. Fortun 2014).

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consciousness. Like magic, power over other people is universally mediated by human perceptions, but this is *never conceded*, except in retrospect. Would it be possible to argue that modernists are as deluded by the magic of their artifacts as any premodern people ever were? Can we manage to expose the magic of our technology?

I have elsewhere argued that the "Industrial Revolution" is not exhaustively explained by reference to technological breakthroughs such as the harnessing of fossil fuels as a source of mechanical energy (Hornborg 1992, 2001a, 2011). The very conditions of technological innovation were radically transformed in the late eighteenth century. We usually think that the decisive factors were engineering science and the adoption of fossil fuels, but none of this would have been possible without the global social processes which made the relative prices of labor and resources on the world market *prerequisite* to "technological progress" in Europe.[16] If slaves would have been paid standard British wages, and depopulated American fields had fetched standard British land rent, it is not self-evident that there would have been an Industrial Revolution. Up until that historical point, technology was founded on local ingenuity, and understood as such. Beyond that point, and for over two hundred years now, the understanding of technology as founded on mere ingenuity has persisted, but become highly inadequate. Ingenuity is a necessary but not *sufficient* condition for modern technological progress. Global price relations are systematically excluded from our definition of technology, even though, by organizing asymmetric resource flows, they are crucial for its very existence. Without a doubt, "Cartesian dualism" is at the root of the difficulties we are having in perceiving our technological fetishism.[17]

When the Inca emperor imported *Spondylus* shells from Ecuador to persuade his subjects to labor in his fields, the "productive potential" of *Spondylus* was symbolic—it was dependent on human perceptions. When the California farmer imports oil to run his water pumps, the productive potential of oil appears to be objective, like turning a key in a lock, independent of perceptions. But here is the illusion of modern technology: his *access* to oil, and to the machinery it animates, is ultimately contingent on the socially constructed rates by which oil is exchanged for American exports on the world market. And whatever economists will tell us, we should never doubt that those rates are dependent on human perceptions.[18] Locally, our technology mystifies us by pretending to be productive independently

16. For elaboration and substantiation of this argument, see Hornborg (2011, 2014c).

17. Even in as "holistic" a field as anthropology, it is striking how discourses on political economy, economic anthropology, and cultural aspects of human exchange (e.g. Graeber 2011a) generally have so little to say on the material substance of exchange, and how even discourses on "materiality" tend to avoid questions of *materially* asymmetric global resource flows (cf. Hornborg 2014c).

18. Gregory's (2014: 57–60) review of the approach of so-called "cultural economy" reveals how *homo economicus* has been reborn as the market's "calculative agencies," largely embodied in financial traders as "thinking subjects" pitting hope against uncertainty in their struggle to exploit differences in time, space, and human knowledge. A price, in this harmonious view of the market, is an "acceptable compromise" (ibid.).

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of exchange rates, but viewed from a global perspective, it is indeed dependent on human perceptions.

A conclusion from these deliberations would be that we should distinguish between three fundamental categories of artifacts, defined by the specific ways in which they are delegated agency. The first is local, nonindustrial technology, which operates without the mediation of either human perceptions or exchange rates. It can be exemplified by keys or by locally produced implements such as the Andean foot-plow. The second is "local magic," which operates by means of human perceptions, exemplified by coins or *Spondylus* shells. The third is globalized technology, which *locally* appears to operate without the mediation of human perceptions, but globally relies on exchange rates continuously shaped by the strategies of market actors.[19] It could also be called "global magic," and can be exemplified by machines such as water pumps that run on fossil fuels or electricity. If we do not retain our capacity to distinguish between the subjective and the objective, the crucial differences between these three categories of artifacts will remain invisible for us.

I will thus conclude by proposing that, from a global perspective, modern technology *is* magic. It is a specific way of exerting power over other people while concealing the extent to which it is mediated by human perceptions. In addition to sketching this argument for a radical revision of our Western worldview, I hope to have shown that some tenets of the so-called "ontological turn" in anthropology are not necessarily very helpful in constructing such an argument. Ultimately, the confrontation between Amazonian animism and Euro-American naturalism is a political issue, where the claim of modern science and technology to be objectively superior has proven difficult to deconstruct. Unfortunately, appeals to the virtues of animism are not likely to turn the tables on capitalism. But if Amazonian anthropology can provide us with the analytical tools to demonstrate that the Euro-American technology which is now devastating the Amazon Basin is itself a kind of magic, it would be an irony that I think many anthropologists—and many Amazonians—would appreciate.

More ominously, it suggests that the pervasive assumption of technological progress as the salvation of industrial civilization is no less naïve than other cultural illusions that have sustained premodern empires facing collapse. As our anxieties about the future prospects of this civilization become increasingly difficult to suppress, there emerges the contrary, neoromantic sentiment that indigenous, animist ontologies could provide us with clues on how to achieve sustainability and resilience. But rather than championing a magical ontology that most of us have irrevocably lost, an anthropological approach is more usefully applied to exposing the unacknowledged magic of our own ontology. Although

19. Although the concept of "globalization" is indispensable in communicating this aspect of modern technology, we should keep in mind that it was introduced to replace the neo-Marxist concept of "imperialism" (Gregory 2014: 56–58). Rather than immersing ourselves in alternative ontologies and denying the reality of "a common world" (Goldman 2009: 113), anthropologists would do well to contemplate the incontrovertible material inequalities evident in global statistics on purchasing-power and physically visible even in nightly satellite images of the world.

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the project of defamiliarizing and deconstructing our presumptively modernist categories is very much facilitated by juxtaposition with nonmodern ontologies, this is not necessarily tantamount to advocacy of the nonmodern, but may well amount to an acknowledgment that our categories have not been modern enough.

References

Århem, Kaj. 1996. "The cosmic food web: Human–nature relatedness in the northwest Amazon." In *Nature and society: Anthropological perspectives*, edited by Philippe Descola and Gísli Pálsson, 185–204. London: Routledge.

Balée, William, and Clark L. Erickson, eds. 2006. *Time and complexity in historical ecology: Studies in the neotropical lowlands*. New York: Columbia University Press.

Basso, Ellen. 2011. "Amazonian ritual communication in relation to multilingual social networks." In *Ethnicity in ancient Amazonia: Reconstructing past identities from archaeology, linguistics, and ethnohistory*, edited by Alf Hornborg and Jonathan D. Hill, 155–71. Boulder: University Press of Colorado.

Bessire, Lucas, and David Bond. 2014. "Ontological anthropology and the deferral of critique." *American Ethnologist* 41 (3): 440–56.

Bird-David, Nurit.1999. "'Animism' revisited: personhood, environment, and relational epistemology." *Current Anthropology* 40S: 67–91.

Blower, David. 2000. "The many facets of *mullu*: More than just a *Spondylus* shell." *Andean Past* 6: 209–28.

Boomert, Arie. 1987. "Gifts of the Amazons: 'Green stone' pendants and beads as items of ceremonial exchange in Amazonia and the Caribbean." *Antropologica* 67: 33–54.

Carter, Benjamin P. 2011. "*Spondylus* in South American prehistory." In *Spondylus in prehistory: New data and approaches. Contributions to the archaeology of shell technologies*, edited by Fotis Ifantidis and Marianna Nikolaidou, 63–89. Oxford: BAR International Series 2216.

Costa, Luiz, and Carlos Fausto. 2010. "The return of the animists: Recent studies of Amazonian ontologies." *Religion and Society: Advances in Research* 1 (1): 89–109.

Descola, Philippe. 1996. "Constructing natures: Symbolic ecology and social practice." In *Nature and society: Anthropological perspectives*, edited by Philippe Descola and Gísli Pálsson, 82–102. London: Routledge.

———. 2013. *Beyond nature and culture*. Chicago: University of Chicago Press.

———. 2014. "All too human (still): A comment on Eduardo Kohn's *How forests think*." *Hau: Journal of Ethnographic Theory* 4 (2): 267–73.

Descola, Philippe, and Gísli Pálsson, eds. 1996a. *Nature and society: Anthropological perspectives*. London: Routledge.

———. 1996b. "Introduction." In *Nature and society: Anthropological perspectives*, edited by Philippe Descola and Gísli Pálsson, 1–21. London: Routledge.

This content downloaded from 212.090.095.251 on June 03, 2020 00:57:36 AM
All use subject to University of Chicago Press Terms and Conditions (http://www.journals.uchicago.edu/t-and-c).

Elder-Vass, Dave. 2015. "Disassembling Actor-Network Theory." *Philosophy of the Social Sciences* 45 (1): 100–21.

Erikson, Philippe. 2009. "Obedient things: Reflections on the Matis theory of materiality." In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 173–91. Tucson: University of Arizona Press.

Fausto, Carlos. 2007. "Feasting on people: Eating animals and humans in Amazonia." *Current Anthropology* 48 (4): 497–530.

Fischer, Michael M. J. 2014. "The lightness of existence and the origami of 'French' anthropology: Latour, Descola, Viveiros de Castro, Meillassoux, and their so-called ontological turn." *Hau: Journal of Ethnographic Theory* 4 (1): 331–55.

Fortun, Kim. 2014. "From Latour to late industrialism." *Hau: Journal of Ethnographic Theory* 4 (1): 309–29.

Gassón, Rafael A. 2000. "*Quirípas* and *mostacillas*: the evolution of shell beads as a medium of exchange in northern South America." *Ethnohistory* 47 (3–4): 581–609.

Gell, Alfred. 1992. "The technology of enchantment and the enchantment of technology." In *Anthropology, art and aesthetics*, edited by Jeremy Coote and Anthony Shelton, 40–66. Oxford: Clarendon.

Goldman, Marcio. 2009. "An Afro-Brazilian theory of the creative process: An essay in anthropological symmetrization." *Social Analysis* 53 (2): 108–29.

Graeber, David. 2011a. *Debt: The first five thousand years*. New York: Melville House.

———. 2011b. "'Consumption.'" *Current Anthropology* 52 (4): 489–511.

Gregory, Chris. 2014. "On religiosity and commercial life: Toward a critique of cultural economy and posthumanist value theory." *Hau: Journal of Ethnographic Theory* 4 (3): 45–68.

Guzmán-Gallegos, María A. 2009. "Identity cards, abducted footprints, and the book of San Gonzalo: The power of textual objects in Runa worldview." In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 214–34. Tucson: University of Arizona Press.

Heywood, Paolo. 2012. "Anthropology and what there is: Reflections on 'ontology.'" *Cambridge Anthropology* 30 (1): 143–51.

Hornborg, Alf. 1992. "Machine fetishism, value and the image of unlimited good: Towards a thermodynamics of imperialism." *Man* (N.S.) 27: 1–18.

———. 1996. "Ecology as semiotics: Outlines of a contextualist paradigm for human ecology." In *Nature and society: Anthropological perspectives*, edited by Philippe Descola and Gísli Pálsson, 45–62. London: Routledge.

———. 2001a. *The power of the machine: Global inequalities of economy, technology, and environment*. Walnut Creek, CA: AltaMira.

———. 2001b. "Vital signs: An ecosemiotic perspective on the human ecology of Amazonia." *Sign Systems Studies* 29 (1): 121–52.

———. 2001c. "Symbolic technologies: Machines and the Marxian notion of fetishism." *Anthropological Theory* 1 (4): 473–96.

This content downloaded from 212.090.095.251 on June 03, 2020 00:57:36 AM
All use subject to University of Chicago Press Terms and Conditions (http://www.journals.uchicago.edu/t-and-c).

———. 2005. “Ethnogenesis, regional integration, and ecology in prehistoric Amazonia: Toward a system perspective.” *Current Anthropology* 46 (4): 589–620.

———. 2011. *Global ecology and unequal exchange: Fetishism in a zero-sum world*. London: Routledge.

———. 2014a. “Technology as fetish: Marx, Latour, and the cultural foundations of capitalism.” *Theory, Culture, and Society* 31 (4): 119–40.

———. 2014b. “Political economy, ethnogenesis, and language dispersals in the prehispanic Andes: A world-system perspective.” *American Anthropologist* 116 (4): 810–23.

———. 2014c. “Ecological economics, Marxism, and technological progress: Some explorations of the conceptual foundations of theories of ecologically unequal exchange.” *Ecological Economics* 105: 11–18.

Hugh-Jones, Stephen. 2009. “The fabricated body: Objects and ancestors in northwest Amazonia.” In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 33–59. Tucson: University of Arizona Press.

Kohn, Eduardo. 2013. *How forests think: Toward an anthropology beyond the human*. Berkeley: University of California Press.

———. 2014. “Further thoughts on sylvan thinking.” *Hau: Journal of Ethnographic Theory* 4 (2): 275–88.

Latour, Bruno. 1993. *We have never been modern*. Translated by Catherine Porter. Cambridge, MA: Harvard University Press.

———. 2005. *Reassembling the social: An introduction to Actor-Network-Theory*. Oxford: Oxford University Press.

———. 2009. “Perspectivism: ‘Type’ or ‘bomb’?” *Anthropology Today* 25 (2): 1–2.

———. 2010. *On the modern cult of the factish gods*. Durham, NC: Duke University Press.

———. 2014. “On selves, forms, and forces.” *Hau: Journal of Ethnographic Theory* 4 (2): 261–66.

Marcus, George E., and Michael M. J. Fischer. 1986. *Anthropology as cultural critique: An experimental moment in the human sciences*. Chicago: University of Chicago Press.

Marglin, Stephen. 1990. “Towards the decolonization of the mind.” In *Dominating knowledge: Development, culture, and resistance*, edited by Frederique Apffel Marglin and Stephen Marglin. Oxford: Clarendon Press.

Martin, Keir. 2014. “Afterword: Knot-work not networks, or anti-anti-antifetishism and the ANTipolitics machine.” *Hau: Journal of Ethnographic Theory* 4 (3): 99–115.

Mauss, Marcel. (1925) 1990. *The gift: The form and reason for exchange in archaic societies*. Translated by W. D. Halls. London: Routledge.

Miller, Joana. 2009. “Things as persons: Body ornaments and alterity among the Mamaindê (Nambikwara).” In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 60–80. Tucson: University of Arizona Press.

This content downloaded from 212.090.095.251 on June 03, 2020 00:57:36 AM
All use subject to University of Chicago Press Terms and Conditions (http://www.journals.uchicago.edu/t-and-c).

Paulsen, Alison C. 1974. "The Thorny Oyster and the voice of God: *Spondylus* and *Strombus* in Andean prehistory." *American Antiquity* 39: 597–607.

Pfaffenberger, Bryan. 1992. "Social anthropology of technology." *Annual Review of Anthropology* 21 (1): 491–516.

Pillsbury, Joanne. 1996. "The Thorny Oyster and the origins of empire: Implications of recently uncovered *Spondylus* imagery from Chan Chan, Peru." *Latin American Antiquity* 7 (4): 313–40.

Quilter, Jeffrey. 1990. "The Moche revolt of the objects." *Latin American Antiquity* 1 (1): 42–65.

Sahlins, Marshall D. 2013. "Foreword." In *Beyond nature and culture*, by Philippe Descola, xi–xiv. Chicago: University of Chicago Press.

———. 2014. "On the ontological scheme of *Beyond nature and culture*." *Hau: Journal of Ethnographic Theory* 4 (1): 281–90.

Salomon, Frank. 1986. *Native lords of Quito in the age of the Incas: The political economy of north Andean chiefdoms*. Cambridge: Cambridge University Press.

Salomon, Frank, and George L. Urioste. 1991. *The Huarochirí manuscript: A testament of ancient and colonial Andean religion*. Austin: University of Texas Press.

Santos-Granero, Fernando, ed. 2009a. *The occult life of things: Native Amazonian theories of materiality and personhood*. Tucson: University of Arizona Press.

———. 2009b. "Introduction: Amerindian constructional views of the world." In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 1–29. Tucson: University of Arizona Press.

———. 2009c. *Vital enemies: Slavery, predation, and the Amerindian political economy of life*. Austin: University of Texas Press.

———. 2013. "Ensoulment as social agency: Life and affect at the interface between people and objects." Paper presented at the 112th Annual Meeting of the American Anthropological Association, Chicago.

Santos-Granero, Fernando, and Frederica Barclay. 2011. "Bundles, stampers, and flying gringos: Native perceptions of capitalist violence in Peruvian Amazonia." *Journal of Latin American and Caribbean Anthropology* 16 (1): 143–67.

Schaan, Denise P. 2012. *Sacred geographies of ancient Amazonia: Historical ecology of social complexity*. Walnut Creek, CA: Left Coast Press.

Strum, Shirley, and Bruno Latour. 1987. "Redefining the social link: From baboons to humans." *Social Science Information* 26: 783–802.

Taussig, Michael T. 1980. *The devil and commodity fetishism in South America*. Chapel Hill: University of North Carolina Press.

Torres, Constantino M. 1987. *The iconography of South American snuff trays*. Etnologiska Studier 37. Gothenburg: Göteborgs Etnografiska Museum.

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All use subject to University of Chicago Press Terms and Conditions (http://www.journals.uchicago.edu/t-and-c).

Turner, Terence. 2009. "Valuables, value, and commodities among the Kayapo of central Brazil." In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 152–69. Tucson: University of Arizona Press.

Vigh, Henrik E., and David B. Sausdal. 2014. "From essence back to existence: Anthropology beyond the ontological turn." *Anthropological Theory* 14 (1): 49–73.

Viveiros de Castro, Eduardo. 1998. "Cosmological deixis and Amerindian perspectivism." *Journal of the Royal Anthropological Institute* (N.S.) 4 (3): 469–88.

———. 1999. "The transformation of objects into subjects in Amerindian ontologies." Paper presented at the 98th Annual Meeting of the American Anthropological Association, Chicago.

Walker, Harry. 2009. "Baby hammocks and stone bowls: Urarina technologies of companionship and subjection." In *The occult life of things: Native Amazonian theories of materiality and personhood*, edited by Fernando Santos-Granero, 81–102. Tucson: University of Arizona Press.

L'économie politique du technofétichisme: Agency, ontologies amazoniennes et magie mondialisée

Résumé : L'ethnographie des relations entre humains et objets en Amazonie révèle, en creux, le rôle des objets technologiques dans la société contemporaine. Plutôt que d'abandonner les catégories de "sujet" et d'"objet", de "société" et de "nature", comme le proposent les partisans d'un tournant ontologique, une autre approche possible consiste à comparer les transformations de sujets à objets, et la naturalisation de relations de pouvoir dans ces deux contextes. L'attribution d'une capacité d'agir et d'une subjectivité a des objets par l'animisme amazonien engage souvent des notions de personne et d'intention, alors qu'en Occident, les objets technologiques sont essentiellement perçus comme des agents autonomes; dans les deux cas, ce type de perception peut être interprété comme des affirmations au sujet de relations sociales fétichisées. Dans le cas amazonien, un observateur étranger peut établir que la délégation d'une capacité d'agir à des objets dépend d'une conscience humaine, tandis qu'il est souvent supposé que la technologie agit indépendamment des perceptions humaines. Cependant, si l'on reconnait la dépendance de la technologie moderne envers les taux de change et les strategies financières de l'économie mondialisée, on s'aperçoit que la capacité d'agir des objets est également dépendante de la subjectivité humaine. En changeant de focale, d'une approche ontologique de l'économie politique à une anthropologie comparative, on voit plus clairement que la technologie moderne est une forme de magie mondialisée.

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