Scientific Research Publishing

Advances in Anthropology, 2017, *, *-*
http://www.scirp.org/journal/aa
ISSN Online: 2163-9361
ISSN Print: 2163-9353

The 'Edibility Approach': Using Edibility to Explore Relationships, Plant Agency and the Porosity of Species' Boundaries

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How to cite this paper: Author 1, Author 2, & Author 3 (2017). Paper Title. ****, *, **-**.
http://dx.doi.org/10.4236/***.2017.*****

Received: **** **, ***
Accepted: **** **, ***
Published: **** **, ***

Abstract

This paper introduces the Edibility Approach, which proposes that the condition of 'being edible' is a mechanism that some plants employ to influence their ingesters to care for them. In light of correspondences between interdisciplinary representations of plants' abilities to communicate across species, this paper demonstrates how, rather than passive entities, plants actively use their edibility to forge relationships with other beings. Using an interdisciplinary and ethnographic framework that foregrounds the ways that plants influence human bodies specifically, the Edibility Approach encourages consideration of the corollary processes that occur during and succeeding digestion from a relational perspective. Interrogation of the social effects of eating plants and the part plants play in inciting behaviours as if from 'the inside' of bodies moves away from the notion that plants are resources and towards understanding that they are active influencers. This offers a much needed alternative direction to the study of plant/human-animal relationships. Therefore, this phyto-centric framing offers a new botanical ontology and conceptual tool to explore dependencies between species. In addition, by using a morethanhuman, multi-species framework that rejects reductionist methods in favour of the relational, the Edibility Approach effectively problematizes the category/species boundaries that both establish and characterize the differences between plant and animal. In so doing it offers a timely contribution to the scholarship that hopes to offer novel methods of understanding planetary relationships in the Anthropocene.

Keywords

Edibility; New Materialities; plant agency; species boundaries; morethanhuman; relationality, multi-species

1. Introduction

Studies from diverse disciplines claim that conventional definitions of plants (as useful passive resources without volition) inadequately describe plant abilities and the complexity of their ecological relationships (Cf. Abram, 1997; Baluska & Mancuso, 2009; Chamowitz, 2012; Hall, 2011; Harvey, 2005; Gagliano, 2015; Narby, 2006; Van der Veen, 2014). These claims are beginning to seriously contest orthodox zoocentric classifications that position plants as diametrically opposed and hierarchically inferior to the taxonomic category 'animal' because they demonstrate that plants are actively influencing diverse subjects in previously unconsidered ways. These advances suggest that how plant/human relationships are understood should be reconsidered.

By picking up the thread of these important epistemological challenges, and with a view to highlighting the physicality of material engagements that occur across somatic boundaries, this article draws on and extends the discussions that explore the value (and accuracy) of the boundaries that continue to articulate modernist understandings of different species (Cf. Haraway, 2000, 2008; Latour, 1993). By adopting a methodology that coheres the frameworks of the morethanhuman, multi-species and New Materialities moves, I offer a botanical ontology (or phyto-centric perspectivism) called the Edibility Approach (EA). This approach re-imagines plant/human-animal relationships by attending to the ingestion of phyto-matter by people. As such, digestion is reframed as a relational event (Bennett, 2007; Mol, 2008) through which plants are able to influence the people who ingest them.

At a time when sustainability in the broadest sense is high on the global agenda, novel ways of approaching the environment that highlight the vital eco-entanglements that exist between biota has assumed significance. Consequently, through shining a light onto the physiological, personal and social outcomes of ingesting plants, the condition of being edible (and eaten) is presented as a capability plants use to influence human-animals, and therefore is an integral factor in the binding of human-animals' lives to the plants they desire to eat. Moreover, in attending to the physiological and concomitant social consequences of digestion, the EA not only demonstrates that plants generate human actions from within their bodies but also that plants' benefit from their ability to influence their ingesters. This approach builds on existing interdisciplinary scholarship that documents alternative ontological approaches to how plants' impact on their ecologies and extends this to include the physiological effects of plants on personal (and social) metabolism.

A relational perspective is an ecological one; it considers existence as a co-productive exercise. It rejects a Cartesian human exceptionalist position in favor of the recognition of existential interconnectivity (Capra, 2010) and acknowledges the webs that bind multiple interacting parties together (Barad, 2010; Bennett, 2010). The morethanhuman

move, emerging initially from Human Geography, adopts a relational perspective that dethrones the human from its central position by asserting that there are always more-than-human processes shaping social lives (Boivin, 2008; Whatmore, 2002, for example, seed drift altering available vegetation and subsequently diets.). Multispecies ethnographies (originally inspired by biologist Haraway's "species turn" in *When Species Meet* (2008) but also promoted by Kirksey & Helmreich (2010)), bring in the voices and agency of previously muted others (particularly non-human animals), so that the manners by which other species co-construct the worlds we share are elucidated. This is also the broad intention of the New Materialities movement. Quite distinct from simply acknowledging matter or matter as objects, it calls for an ethical and political re-engagement with materials that foreground the properties of worldly substances so as to illustrate their co-productive roles in our shared physical experiences (Coole & Frost, 2010).

These perspectives present a front line in current scholarship that offer a profound alternative to understanding how humanity engages with the planet in the Age of the Anthropocene. Shifting away from a conception in which the dominant human takes precedence, towards recognition that life is comprised of a series of affective relationships, is cited as an important step in the vital reconceptualization of our understanding of the material world (Tonnessen *et al.,* 2016). The EA attends to this aim by providing an additional innovative perspective to the current orthodox reductive methodologies. The EA enables relationships themselves and the ecological processes (that occur because things engage) to be considered, rather than the products or outcomes of relationships. The shift of focus onto the relationality of edibility (and the physical processes of digestion and assimilation of plants into people's bodies) reveals the influences that plants hold on (and around) bodies as a direct result of being edible. Ingestion is positioned as a process of material incorporation of one into another, and as such demonstrates how being eaten functions as a mechanism through which plants influence people. This interdisciplinary approach blends the relational focus of the moves cited above to achieve what Witmore (using Latour's theory of ontological symmetry, 1999) calls an 'analytical levelling' (Witmore, 2007: 547) of the material world, which hopes to close the representational gap furrowed by the modernist myth that currently acts to separate life into categories, groups and bits (Witmore, 2007: 552).

2. Rendering Plants: Agency and Relationships

Despite an acknowledgement of plants' worth, their fundamental position, in line with human exceptionalist ideas of worldly engagements, is characteristically portrayed as simply supportive of the human agents that use them (Hall, 2011). Thus, typically, humanity is depicted as playing the driving role in their associations with plants and any ensuing domesticative farming practices. This perspectival leaning (or botanical ontology), affords humanity a pivotal and the agential role around which plants are typically positioned as objects and resources available for exploitation. While this method and rendering has to some extent been challenged by scholarship that, for example, consid-

ered moves from foraging to farming and plant domestication (Cf. Germillion *et al*., 2014; Harris & Hillman, 1989; Piperno, 2011), these challenges nonetheless tend to continue to rely on a human-centric focus where accounts are framed by the assumption that people interact with plants, and are less likely to present plants as interacting with people (Examples of this include: Piperno, 2011; Schaefer & Ruxton, 2011). Although works such as these do significantly contribute to repositioning human-animal/plant relationships as an ecological continuum in a 'global evolutionary process' (Harris & Hillman, 1989: 2), they give incidental attention to how plant behaviors and abilities influence human-animals. A position succinctly summed up by Fuller and Allaby when they state 'the single most important domestication trait … [is that]…it makes a species dependent upon the human farmer' (2009: 240). This perspective, whilst recognizing interdependence and a level of co-evolution (Fuller & Allaby, 2009; Rindos, 1984), also depicts human action as the agential force that has enabled this kind of co-evolutionary arrangement. While, clearly, this affords plants a place in the production of human lives and recognizes the requirements of plant biology, this representation assumes the motor of domestication was (and is) human action and agency. This assumption sidesteps the part plants play in the provocation of human behaviors, and by implication rejects any notion that plants play an active part in driving their relationships with human animals. (Further to the above, I think it is safe to say that before any adoption of horticultural practices, plant/human-animal relationships were of obvious significance (Cf. Denham *et al.,* 2009; also see Mitchell & Hudson, 2004). Certainly, ethnographies of modern hunter-gatherers demonstrate this to be the case citing that, rather than hopeful roaming, foraging groups rotate within culturally mapped ancestral lands not only to harvest plant foods seasonally but also to engage with plants in such a way as to promote and encourage their fecundity for the next season (Cf. Bird-David, 1992; Cummings, 2013).)

This paper is concerned with drawing out the part plants play in this process further, and by adopting the EA offers another method to understand how plant/human-animal relationships are enacted that not only recognizes ecological entanglements but through acknowledgment of the interactivity, and consequences, of ingestion considers what plants do to people. Through recognition of their ability to affect through digestion, this method brings the physiological influences of plants to the table.

In the light of recent work that challenges the value of perpetuating a human exceptionalist stance, and which encourages in its place a hybrid politics that recognizes natures are conjoined (Castree, 2003), alternative perspectives regarding plant/human-animal (as opposed to human-animal/plant) relationships are increasingly being sought and proposed (Abram, 1997; Baluska & Mancuso, 2009; Bennett, 2010; Chamowitz, 2012; Hall, 2011; Harvey, 2005; Narby, 2006; Van der Veen, 2014). Taking inspiration from epistemologies that call for a blurring of boundaries in an emerging hybrid world (Demeritt, 2005), this commentary explores the results of amalgamating botanical and ethnographic ontologies using the blending of materialities caused by edibility as the framing. In so doing,

the corollaries of intermingling entities and the communicative capabilities of plants is further elucidated. These ideas validate not only the idea that current relationships between some plants and humans are the result of bodies having been blended (Bennett, 2007, 2010; Ingold, 2008a) through digestion, but also that species' boundaries paradoxically both blur and manifest in distinctive ways through these relationships. The EA framework thus recognizes the profound material entanglement of plant/human-animal relationships (Cf. Hodder, 2011; Van der Veen, 2014) within a wider network of distributed agential engagements. By adopting this perspective, the binding and bonding processes of digestion and assimilation are shown to offer plants a voice and are thus revealed to be persuasive and affective from within the bodies of other beings (Bennett, 2010:39) as well as from without. When viewed in this way, edibility emerges as an approach that explores the becoming-with of ingestive relationships from an alternative and complementary perspective to that of domestication and farming. Consequently, noting edibility extends the reach of studying plant/human-animal relationships through domestication and into the biologies of creation. The EA, adds to Pollan's (2002) assertion that being eaten is an acceptable evolutionary trade off against the possibility of genetic propagation by demonstrating how being edible is a method through which the ingested (plants) manage to influence and persuade ingesters to behave in ways that sustain plant lives. As a result, the process of being eaten is not always understood as something plants would invariably avoid. Rather, using this stance, ingestion and assimilation become the setting through which melding biological materials form a physical association between the ingester and ingested – a process that further promotes human attention (and connection) to plant bodies. This framing transforms edible plants from inert objects into subjectivities that actively engage in relationships with their human partners.

3. Ingesting Plants in a Morethanhuman and Multispecies Materiality Perspective

The New Materialities Turn (Cf. Bennett, 2010; Coole & Frost, 2010; Witmore, 2014) is an epistemological shift that calls for interdisciplinary collaborations to reengage with materials as lively subjects of study (Ingold, 2007a, 2008a, b). As distinct from material culture studies which acknowledges engagements with material objects, this new materialities perspective calls for a radical reconfiguration of empirical enquiry that acknowledges 'the primacy of matter in our theories' (Coole & Frost, 2010: 1), and which supports novel ways of exploring and analysing a world that is produced entirely of, with and from matter.

The word matter describes an infinite range of different substances or perceptible presences that respond to conditions in accordance with their particular properties. Despite behavioural differences or distinctions, the term tends to be inferred as a collectivist, that is: an inert set of substances; torpid, impassive masses that occupy space without attention or awareness. This method of depiction, rooted in Positivism and Cartesian Dualism, refuses materials any life despite the fact that the composition of all enlivened beings

relies indivisibly on what is purported to be inert. This position is increasingly contested in diverse ways by the interdisciplinary work of scholars such as Barad (2007), Bennett (2010), Haraway (2008), Helmreich (2008), Ingold (2008a, b, 2011, 2013), Kohn (2007, 2013), Margulis and Sagan (2007), Morton (2013) and Whatmore (2002), all of whom attend to exploration of the forces inherent in materials as they engage in human lives. Consequently, large-scale elemental processes such as the ocean (Helmreich, 2008), ecological systems such as forests (Kohn 2013), the weather (Ingold, 2008a) and biological events, for example a viral pandemic (Margulis & Sagan, 2007) are used to illustrate the agential interconnected meshwork of living (Ingold, 2007b). Matter thus is revealed as actively involved in creating lives.

Using this lens, the boundaries that hold materials as discrete, self-contained and uninvolved "dissolve" allowing all materials (including those that comprise the human body) to be reimagined as leaky, porous and dependent. This reveals a blended, entangled, indiscrete world (Barad, 2007), and draws the chemical engagements by which substances produce the physical realm into focus. The very stuff of life may now be seen as an ever-rearranging set of substances that continually cohere to form into an almost infinite range of different assemblages (Deuleuze & Guattari, 2014) of interactive, provocative actants (Latour, 2004). However, the impression of a state of all-fluid potentiality is interrupted when we are reminded that materials are limited by their properties and can only act in accordance with their particular capabilities. Thus, the methods by which materials interact are predicated on the manner in which intermingling substances are able to engage with each other. Consequently, each relationship is stipulated and prescribed by the brute physico-chemical parameters of that engagement. Framed in this way, we can see that it is through associating materials that all bodies (as materials) arise, and are shaped and influenced, and that materials are not simply inert but are reactive formative agents that, through (and because of) their physicality are able to instigate actions and behaviours. It is from this, that materials emerge as co-creators and co-organisers of both ecological and cultural worlds with the human-animals who are currently given primary agential credit.

Taking this lead, I use edibility and ingestivity as foci to push harder onto and through the boundaries between edible plants and the human-animals that eat them to consider the outcomes produced as a result of these interacting materials. By adopting this stance, the multiple behavioural results of digestion may now be re-interpreted to illuminate the manner through which plants influence human-animal behaviour, and thereby plants are provided with a voice in their ingestive relationships with those people that eat them. Furthermore approaching engagements materially or corporeally reveals alternative understandings of how relationships materialize into being. In this case, enabling plants to emerge as affective partners both before and after ingestion. This perspective all but embraces the chemistry of interactivity and shows that the properties of matter within the meshwork of possibilities is instrumental in both enabling and limiting the actions that

are involved (Morton, 2013). Using digestive processes as a biological location where the bodies of species' amalgamate and influences occur plants emerge as powerful constitutive participants with operative roles in many areas of human social lives—as the need for a cup of coffee in the morning testifies.

To establish plants as agents that attract and forge relationships with human-animals we need to turn our attention to the burgeoning body of literature on plant communication mechanisms that is being produced in the plant sciences.

4. New Perspectives on Plant Abilities: Agency from a Botanical Perspective

Communication:
'Trait values [that]…stimulate…in such a way as to cause a change in behaviour' (Schaefer & Ruxton, 2011:2)

4.1. Uniting the Kingdoms

In 2009, Baluska and Mancuso stated that it was more accurate to describe plants as social beings than as passive inert organisms. Their assertion, announced as supportive of what they determine to be a 'critical mass of data' (Baluska & Mancuso, 2009:3), has since been judged a direct challenge (see: Pollan, 2013) to previously established taxonomic classifications that determine what constitutes 'a plant'. As a result, selected areas of scholarship are now also calling for an appraisal of what the term 'plant' describes, and consequently, reconsideration of human-animal/plant engagements (Hall, 2011).
The collective findings of these studies demonstrate that plants appear to be display agential, cognitive and also autonomous qualities (Gagliano, 2015); traits more typically ascribed to animals. For example, the recent work of Simard and colleagues (e.g., Simard 2009 a, b; Simard *et al*. 2011, 2012) reveals that trees in woodlands are intimately connected by a mycorrhizal network rather than existing as discrete stand-alone organisms, as ground-level appearances suggest. Simard notes how this network operates below the forest floor as an intricate and convoluted interplant nutrient exchange mechanism that symbiotically shuffles nourishment back and forth between the trees and cohabiting fungal groups. More astonishing perhaps is that this system also offers precise, targeted support by providing particular attention (extra nutrients) to plants in need, such as saplings, those under stress and kin (Simard 2011, 2012). This interspecies methodology demonstrates that within the kingdoms *Plantae* and *Fungi* not only do species cooperatively share but also that this sharing is steered towards plants considered either related or in need.

Equally noteworthy are the works of Karban *et al.* (2006) and Baldwin *et al.* (2011). Karban *et al.* (2006) show that Sagebrush puff herbivore directed volatiles to protect

neighbouring plants from possible dangers whilst Baldwin *et al.* (2011) reveal that wild tobacco plants pre-emptively ooze a first sugary meal (that Baldwin *et al.* call 'lollipops' (2011)) to feed any larvae that might attempt to consume them. Ingestion of this sticky treat alters the larval odour (making them attractive to) and alerting lizard predators in the vicinity; a capacity or skill, which through edibility protects the plant from being completely ingested. Also contributory is the work of Gagliano who asserts that plants not only collect environmental information to act on but can also be taught, are able to remember and can transmit acoustic messages regarding environmental conditions (Gagliano, 2013a, b; Gagliano *et al*. 2012 a, b, c; Gagliano *et al*. 2014; Gagliano & Renton, 2013). For example, a recent piece of work examines the ability of *Mimosa pudica* to become habituated to repetitive stimuli (Gagliano *et al.,* 2014). Using methodology similar to that used to explore animal memory capabilities, Gagliano radically declares that *Mimosa pudica* exhibits the capacity to learn and remember in a manner that is evocative of behaviours typically displayed by animals (Gagliano *et al.,* 2014). (Also see: Baluska & Mancuso, 2009; Cahill *et al.,* 2010; Dudley & File 2007, 2008; Karban *et al*. 2013 for a further selection of examples that illustrate the previously unrealised relational activities plants regularly enact).

In analysis, Simard felt inclined to compare and equate the belowground shuffling practiced by forest trees to both the family and other social systems, even labelling the key nodes in the network 'mother trees' (Simard, 2015: 9) in reflection of what she concludes is a genuine similarity to maternal behaviour. Dudley and File adopted similar vocabulary when they recognised that non-kin plants compete for root space where kin plants do not (2007), and Gagliano also opted for a lexicon of animal behaviour to describe the plant activities she has witnessed—a position that has brought her work and the work of Dudley and File (Cf. 2008 for a response to their attack) into the firing line (Pollan, 2013). Gagliano has since retaliated by asserting that scholars must break past 'the theoretical barriers… [that are acting to] preclude [understanding of]…the sophisticated behaviours plants exhibit' (Gagliano, 2015:1).

One could interpret any discomfort associated with re-appropriating terminology as indicative of a resistance to representations (or narrative choices) that mix and meld traditional categorizations. However, in the light of current experimental findings, and the calls for recognition of existential hybridity and relationality, current classifications may well need to be reconfigured.

4.2. Re-presenting Plants, Categories and Other Animals

Current experimentation is illuminating the extraordinary range of abilities plants possess. However, as some responses to Gagliano's work testify, findings (and the way they are interpreted) are expected to align with established category characteristics. Thus, it is hoped that actions will fit within prescribed epistemological and taxonomic expecta-

tions as are portrayals. When species' abilities seep out of their expected place and transgress classification boundaries, definitions become both problematically troubled and muddled - a state of affairs that results in accusations of unnecessary and inaccurate personifications of plants.

In a bid to retain (and support) category and species boundaries, scholars such as Alpi *et al.* (2007) maintain that any conclusions reached about plant behaviours must be attentive to and reject any slippage or tendencies to anthropomorphize in their representations. In the event this occurs, representations should be repackaged in accordance with customary expectations. Thus, one could argue that the use of a modernist perspective (that reduces the classified world into discrete taxonomic 'fragments') necessitates scholars' work to (re)place those empirically and cognitively separated bits 'back' into the existential puzzle life presents in accordance with the established classifications. However, as the bits or puzzle pieces have been constructed by the cognitive slicing of life into taxonomic categories, the shapes can only fit back into the schema in accordance with preconceived definitions. This Structuralist approach and methodology can be accused of anticipating resemblance and resisting anomalies (Douglas, 2002). Thus, subjects that straddle category boundaries simply problematize the categories we have culturally carved with and into our minds. Furthermore, anomalies - that is: the subjects that frustrate the categories that human minds have instituted for them - do not only exist *within* cultural systems but manifest *without* the systems humans have established, as can be seen with the photosynthesizing slug *Elysia chlorotica* (Bhattacharya *et al.,* 2013) and the rooted sessile marine invertebrate commonly known as Coral substantiate (Hayward 2010). Living beings such as these merge boundaries and thus have prompted the label 'planimal' in recognition of the way their abilities and characteristics fuse cladistic categorisation (Redding & Cole, 2008).

As has been demonstrated, zoo-centric conceptions of relationships with phytomaterials effectively privilege firstly humans and subsequently other animals with regards plant/animal interactions, and thereby positions humanity as the instigator in their dealings with plants. However, as the latest botanical findings reveal, plants have surprising abilities including successful communication with diverse groups (including animals from different classes such as: insects, mammals, birds, rodents and reptiles and so on—See: Schaefer & Ruxton (2011) for a clear, current and comprehensive series of examples that illustrate the ways plants communicate with non-human animals). If this is the case, then taxonomic classifications are open for interrogation and the value of reductionist thinking needs questioning. Furthermore, if, as studies indicate, plants demonstrate awareness of and influence multiple species, is it not time to include human-animals as recipients of plant messages and consider the possibility that plants are aware of (even interested in) and able to influence and communicate with human-animals as they do with other species?

5. Ethnobotanical Accounts of Human-Animal/Plant Relationships, Ontologies and Issues of Translation

In support of recent botanical representations of plant abilities, there are numerous ethnographic accounts that describe plants as chatty, opinionated and informed communicators concerned for their human associates (e.g., Beyer, 2010; Labate & Cavnar, 2014; Ott, 1995; Plotkin, 1993; Schultes, 1990; Wasson, 1969). Brief exploration shows the trope of wise plants in a morethanhuman world features repeatedly in mythological and cosmological accounts (see Hall (2011), particularly chapters five and six), and that talkative plants have well-established roots in the ethnobotanical literature. For example, Schultes, described on his death by the *New York Times* as a 'trailblazing authority' (Kandell, 2001), was held to be the father of ethnobotany as a result of his exploration into plant use that began in the 1940s. Schultes' work is considered responsible for bringing not only the material fecundity, but also the economic and medicinal worth, of the Amazonian forest flora and its impending destruction to the world's attention. In Furst's 1972 edited volume on the ritual importance of hallucinogens, *Flesh of the Gods*, Schultes comprehensively details nine key families of plant types to show the extensive range of plants that human animals regularly engage with. More importantly for this discussion, his work helped establish the extent, depth and authority of indigenous knowledges regarding plant lives and how for Amerindian peoples plants are significant, intelligent players and key existential informants in their lives. A stance echoed in ethnographic information from around the globe (e.g., see: Mitchell & Hudson (2004) for a review of psychoactive plants and southern African hunter-gatherers), and that, needless to say, this became (and continues to be) a lively point of discussion within cognate disciplines. The EA offers a method to further expand this work by providing another light for looking at how plants influence people's lives.

While anthropology's interests traditionally lie in finding out what it means to be human, ethnobotany's contribution to this overarching aim involves exploration of how plants feature in human lives. The primary concerns of ethnobotany (by definition orientated towards human use of plants) are underpinned by Enlightenment inspired, epistemological foundations, which are similarly reinforced by the human exceptionalist tendencies cited earlier. Thus findings, reports or ethnographies that depict human groups in which plants are classified as persons (or are said to be communicating with people) have tended to be 'translated' away: because statements that claim plants communicate with people are judged impossible and therefore simply symbolic or metaphorically significant events in the social mind (See: Viveiros de Castro (2015) for a recent account on issues of translation encountered in anthropology). Criticisms of these methodologies could be collectively gathered under the auspices of the 'ontological turn' (Kelly, 2014; Pedersen, 2012).

The term ‘ontology’ and the debates circulating its value and use are extensive—too vast for the concerns of this paper. However, in brief, the ontological turn in anthropology is a reflexive project (Pedersen, 2012) that hopes to ‘recalibrate the level at which analysis takes place’ (Course, 2010: 248), and calls for a reconsideration of methods of representation. According to Kelly, for Descola this means ‘humanising all actants’ (2014: 358); while for Latour this means ‘dehumanising everything into things’ (Kelly, 2014: 358) . For me, the ontological turn is a political activity that explores what happens to the world if we desist in translating the worlds of others away and embrace alternative realities as those who live them express them (Kohn, 2013; and see *Hau: Journal of Ethnographic Theory* 2014, 4:1, and Holbraad & Pedersen (2013) and the articles in the ‘Politics of Ontology’ series for wider discussions on concerns and meanings associated with the term ‘ontology’). Consequently, this turn encourages multiple worlds (ontologies) to be recognised as co-existing without inconsistency and attempts to avoid ethnographic translation or representations that use terms or phrases (such as: belief or they believe) that suggest other people’s realities are not grounded in genuine actualities. Thus, the turn towards ontologies allows different worlds to harmonize without rendering or interpretation, and holds to the adage that what people say *is, is how it is.* In association, the term botanical ontologies recognise differences and embrace the portrayal of plants in accordance with the ethnographic contexts from which they arise.

Beyer’s book *Singing to the Plants: a Guide to Mestizo Shamanism in the Upper Amazon* (2010) is a just one example of a text that avoids the trap of translation. In other words, Beyer talks of how plants *give* their knowledge to people, and thereby avoids suggesting that it is people that determine any knowledge of or about plants. Possibly taking the lead from multi-species ethnographies, this method means plants are given a voice and, consequently, are presented as the communicative persons other people know they are (For further examples see: Campos, 2011; Kohn, 2013; Narby, 2006; Ravalec *et al.,* 2007; Razam, 2009; Wilcox, 2003).

5.1 Plant Persons

As Hall (2011) notes Hallowell’s (1960) work on the Ojibwa is perhaps the first text that called plants persons but it was not the last. Since then numerous accounts have done the same. For example, Detwiler writes that the Oglala describe plants as ‘standing-persons’ (1992: 239), Turnbull (1961) and Mosko (1987) claim that for the Mbuti the forest is their parent, Rose et al. (2003) show how Aboriginal Australian groups know plants as family and many Amerindian groups also recognise plants as persons (e.g., Descola, 2013; Labate & Cavnar, 2014; Reichel-Dolmatoff 1996).

Banisteriopsis caapi is a plant person. Its bark is used as an ingredient in the hallucinogenic decoction, Ayahuasca, and therefore, is effectively (if dramatically) illustrative of how a plant affects social and cultural behavior through ingestion. Moreover, as a plant

that 72 Amerindian groups across northwestern Amazonia attribute agency and personhood to (Luna cited in Beyer, 2010: 209), it is a valuable choice in a discussion that explores plant/human-animal relationships. But, it is just one example of a plant ethnographically accredited with agential abilities that manifest through digestion. Mitchell and Hudson discuss how southern African hunter gathers also use numerous plants (e.g.: *Ferraria glutinosa* and *Boophane distacha*) because of the powers they have to effect physiological changes after assimilation (2004) (also see Weckerle *et al.* in Hsu & Harris (2010) and Labate & Cavnar (2014)).

> When you take it, all ailments are cured and then you feel a light inside you. The strength of the medicine is that it teaches you to see the light…Although I am physically blind, I can see everything in this light. This is when I truly see.
> (A Kalahari Bushman healer cited by Keeny, 1999: 59-60 in Mitchell and Hudson, 2004: 42)

> It felt as if an alien intelligence was coursing through me, examining my organs and nerves and cellular processes, making subtle adjustments…When it had done its work, I threw up.
> (Pinchbeck, 2002:139)

> One informant was struck by the feeling that a plant being was in his body and that he had a strong, intimate relationship with it...that was passing on knowledge to him.
> (Shanon, 2002:120)

From these accounts, the affective processes of edibility and the role of digestion in forging and cementing plant/human-animal relationships is affirmed. Furthermore, as much of the literature concerning *B.caapi* demonstrates, it is assimilation that generates (what they regularly describe as) committed relationships between the plants (including individual plants) and themselves. (Fernández, 2014; Peluso, 2014; Shepard 2014; Virtanen 2014). Indeed according to one recent study that looked specifically at North American users:

> Seventy-four percent of the ayahuasca [*sic*] users said they had a relationship with and received ongoing guidance and support from the spirit of ayahuasca.
> (Harris and Gurel, 2012: 209)

For the human ingesters it is these plants themselves and not the hallucinations that are recognized as persons: kin, teachers that guide, inform, diagnose and cure (Virtanen 2014). The notion that plants are 'persons' occurs frequently in cultures that consider all living beings to have emerged originally from a similar material substrate (Cf. Kohn, 2013; Reichel-Dolmatoff, 1987, 1996). Consequently, these plants (and, according to Luna (1984), all plants) are experienced as persons who embody knowledge - knowledge

that can be 'heard' via the process of consumption and the ensuing embodiment that ingestion enables (Labate & Cavnar, 2014). Using the EA, the ingestion of plants transforms from rudimentary survival mechanism to fleshy chemical interface and the device and locus through which not only can plants further communicate with those who eat them, but also becomes a place where the boundaries of beingness and influence blur.

> To learn the plants, you do not just diet: you diet with a plant – that is, ingest the plant, take it into your body, let it teach you from within while you keep loyal to it…The goal of the diet is to maintain an on-going connection or dialogue with the plant; to allow the plant to interact with the body…the plants become your body…they become your allies.
> (Beyer, 2010:60, original emphasis)

Thus, ingestivity, as part of the merging processes of becomings, is acutely visiblised. Not only is ingestion situated as the site of vital (if mundane) lived visceralities, but it is also demonstrated to be a powerfully charged, potentially dangerous activity and the embodied experience where assimilative relationships between species are regularly corporeally realized. Moreover, and significantly for a discussion circulating botanical ontologies, human ingesters assert that plants are persons that have knowledge and impart that knowledge to their human friends through being taken in and physically amalgamated (Cf. Beyer, 2010 quote above and Peluso, 2014; Brabec de Mori, 2014; Virtanen, 2014). Consequently, cross-species knowledge exchange (particularly plant/human-animal exchanges) is in part realised through the consolidation of corporealities that occur as a result of ingestion and assimilation (Beyer, 2010; Labate & Cavnar, 2014; Narby, 1999; Pinchbeck, 2002). In other words, through experience and practice, humans know of edible plants assimilatively. Thus knowledge—that is, in this case, the embodied knowing of an-other—arises between edible plants and humans through the entangling corporeal processes of ingestion. From these ethnographic examples, plants are demonstrated as being able to become friends, helpers, educators and wisdom imparters in association with certain of their body parts being eaten by other people (Virtanen, 2014), a situation that both creates and elucidates the morethanhuman connection between the eater and the one being eaten (Cf. Mol, 2008). This further establishes that it is the ingestion of the plant into the human body that facilitates plant knowledge to be, as it were, heard by the human—and, it is that, which allows the human to know of the plant in this way. In other words, plants are recognized as persons whose voice cannot be heard unless they are digested, assimilated and absorbed into the chemistry of the digester. This distinctive position suggests not only that plants demonstrate another agential capability but also that by combining methods of understanding our worlds (ontologies) together category and physical boundaries can blend and support each other.

6. Being Eaten: the Relational Benefits of Being Ingested

'Plants evolved to be eaten - it is part of their evolutionary strategy' (Mancuso, 2013).

Being eaten is an interesting event. Humans tend to avoid it and so scholars assume that all species strategize to deter or discourage what could be a concluding episode of individuality— and yet, many plants regularly devote energy to encourage passers-by to eat certain parts of their bodies (Cf. Pollan, 2001). Indeed, the expenditure associated with producing color, scent, shape, and sweetness reveals that plants work hard to ensure eaters are seduced into ingesting their body parts (Schaefer & Ruxton, 2011). But who are the eaters plants are labouring to attract? To find accounts that present plants as toiling to attract human-animals is difficult bar a few exceptions (Pollan, 2001; Van der Veen 2014). To suggest that plants invite humanity to engage with them (in the way that is well established with regards insects or other herbivores, for example) sounds derisible. And yet, if, the 'primary desire of plants is to reproduce' as Van der Veen asserts (2014: 800), it is clear that human-animal cultivation skills can be viewed as effectively supportive of that end (Cf. Pollan, 2001; Head *et al.,* 2012; Van der Veen, 2014). To extend this characterization further: it is the very physicality of being edible that has significantly contributed to plants being supported by human-animals in the ways that they have. This demands further consideration in the study of our co-evolutionary relationships. In taking account of edibility through the concomitant consequences of digestion that being edible brings, relationships between plants and human-animals can be reimagined.

Seed dispersal theory describes edibility as part of a process primarily concerned with spatial dynamics. This symbiosis is achieved via the bait or temptation of wonders such as the fruity delights we are all aware of (which, furthermore, are considered invaluable to maintaining human health). Evidently, the rewards and incentives for the dissemination of seed are the tastes and nutritious qualities of the substance taken into the ingester's body. If repositioned using a morethanhuman focus on processes of becoming, the trade of body parts for plants (edibility) demonstrably precipitates and forges relationships that sustain the construction of others' bodies. As Marder reminds us: 'it is nothing out of the ordinary for the plant to fall apart, to fall off with and from itself, without compromising its existence' (2013:80), behavior when positioned alongside other beings appears as a 'self-deconstructive ontology' (Marder, 2013: 80), but, which, for plants, offers an effective survival method. Using a relational materialities perspective, the production of body parts 'designed' for consumption by others also presents as a mechanism through which passing eaters may be encouraged into interested relationships with the plant. Moreover, this example of hospitality (Derrida & Dufourmantelle, 2000) potentially affords the edible party influence over the consumer. And thus, by adopting a plant's perspective, the loss of body parts associated with edibility can now be seen as more than simply a concern with mobilizing and space, to reappear as a method whereby plants can engage with, 'befriend' and influence the behaviors of their ingesters. This is no better illustrated than with the lived realities of physiological addictions that only

phyto-chemicals are able to create in the human-animal. In a morethanhuman world where the consequences of material relationships are acknowledged to generate behaviors in engaging bodies, the ability to arouse cravings (as, for example, coca, coffee, cocoa, tea, sugar and wheat do) assumes particular significance and may be illustrative of the capacities plants possess to inspire devoted attachments in consumers through ingestion and assimilation. This is also evidenced in indigenous examples. For the shamans that Beyer (2010) worked with, plants need to be courted for their knowledge. This is achieved through repeatedly caring for and interacting with (particularly including ingesting) plants.

> To win their love, to learn to sing to them in their own language shamans must first…learn the plants by dieting with them, ingesting them, studying their effects (Beyer, 2010:52)

From the above, edibility and digestion transform into mechanisms plants employ to retain 'addicted' individuals' attention. From a materialities perspective this type of cross-species dependency articulates within a broader matrix that challenges the worth of reductionist perspectives and illustrates the value of a relational picture that acknowledges coinciding ontologies.

7. Conclusion

From this brief examination, it is obvious that whilst simultaneously spinning the plates of multiple ontologies, plant activities can be both re-presented and re-modeled. Reimagining plants in this way supports the view that plants are active rather than passive, responsive (even pre-emptive) rather than simply reactive, and may be as aware of people as they are of other animals. Using recent botanical studies plant abilities have been extended out from the conventional description many of us are familiar with. Plantae have transformed from virtually oblivious, simple, photosynthesizing entities to reappear as tremendously complicated beings with extraordinary, previously unimagined abilities. Plants, when viewed in this way, present as alert and responsive, and with capabilities that enable them to interact with and influence their environments in profound ways. In short, plants emerge as responsive agents who demonstrate what some deem to be social tendencies—a transformation that troublingly attributes what are stereotypically presumed to be animal characteristics onto this previously insensible category of beings. Unsurprisingly, while these new ideas are contributing to informing and generating potent new perspectives on how plants live their lives, human-animal/plant relationships are being pulled into focus as well (Chamowitz, 2012; Hall, 2011; Narby, 2006). This paper acknowledges and is informed by these debates, and in view of the questions these findings raise, pushes discussions of plant abilities in a different direction – one that adopts a phyto-centric perspective of ingestion, and rejects zoocentric and anthropocentric approaches in favor of promoting a symmetrical ontology (Latour, 1993) to consider the in-

fluences of plants when in relationships with human-animals in a morethanhuman world to illustrate how plant activity influences human behavior.

The EA looks at edibility and the ingestion of plants by people through a material lens to demonstrate another way by which plants communicate with human animals. It focuses on the relationships of eating interpenetrative events that prompt the human to corporeally know of, and then revisit and care for the plant species being eaten. Using this approach the notion of eating as self-interested destruction by the consumer of the consumed is challenged and is transformed into an on-going, even committed, relationship with the ingested species. The Edibility Approach invokes Whatmore's morethanhuman geographies (2002), Bennett's vibrant materialities (2010) and the multispecies ethnographic call of scholars such as Haraway (2008) and Kirksey & Helmreich (2010) that suggest life is more accurately represented as a melding, interacting, unfolding or becoming set of relationships in which all living beings and events can be conceived of as agents who influence in myriad ways. This stance effectively ruptures species' boundaries allowing the material porosity between entities to be appreciated and consequently brings plants in as actors with persuasive voices that affect other lives.

The EA expands contemporary understandings of plant abilities to demonstrate how they influence human lives through 'being edible'. This is significant and apposite knowledge in the Anthropocene. In a time when scholarship actively critiques the exclusive reliance on reductionist methods, and is calling for the recognition of relationality as a more accurate depiction of 'life', a phyto-centric focus on the social consequences of eating for *all* those involved demonstrate how eating may be usefully seen as a relationship between ingester and ingested. This perspective not only reveals plants' authority over human bodies but also reminds us of the urgent need to sensitively reconceptualize engagements with the material world in the Age of the Anthropocene.

Acknowledgements

To everyone who participated in the Botanical Ontologies Conference, 2014 in Oxford.

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