Reconceptualizing Educational Research Methodology

ISSN: 1892-042X Vol 15, No 3 (2025) https://doi.org/10.7577/rerm.6235

Post-ethno-botanic inquiry for researching plant-human relations

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Abstract

Plants are having a moment in contemporary research from the intelligence of mycelial networks to the communicative life of ancient forests, 'mother trees,' fungi, and lichens. This paper explores this vegetal turn through a collaborative inquiry in which each author brings situated experiences of human–plant relations. As scientists and educators, we found ourselves unlearning the colonial, anthropocentric, and positivist legacies that have long shaped plant studies. Through this slow unlearning, from botany to ethnobotany and now toward what we call post-ethnobotany, we learn to listen differently to plants, to place, to people, to material affects, and to the more-than-human stories that move through them. Our aim is to decolonise ethnobotany through post-qualitative and posthuman approaches that recognise plants as active participants in multispecies ecologies rather than isolated specimens. Building on work mapping relational vegetal ontologies, we extend toward post-ethnobotanical inquiry grounded in symbiotic, entangled, and reciprocal understandings of plant life.

Keywords: Plant-human relations; ethnobotanic methodology; symbiosis; post qualitative inquiry; post ethno-botanic inquiry.

Introduction

Plants may be experiencing a cultural resurgence, yet they remain near the bottom of the hierarchical 'great chain of being'. Still defined through human-centric categories such as food, medicine, aesthetics, and material use, plants are valued for what they provide rather than for who they are. Although Indigenous ontologies have long understood plants as kin and active participants in the web of life, western science has largely positioned plants as inert objects of

study (Mancuso & Viola, 2015; Gagliano, 2017). The rich lifeworlds of plants, their relations, forms of communication, and ongoing entanglements with other living beings (Wohlleben 2016; Simard, 2021) have too often been dismissed as anomalies, mysteries, and romanticised fiction.

This paper begins by tracing the silences and absences that colonialism has sown into the study of plants. The discipline of botany, once celebrated as the pinnacle of plant science, also became a vessel of erasure stripping plants of their kinship, and more-than-human agency. In the brief span of western scientific history, a particular way of knowing took root with ontology grounded in extraction, reductionism, and anthropocentrism. This view reduced the vegetal world to resources and specimens, constraining human–plant relations within narrow methodological frames. Ethnobotany, defined by Balick and Cox (2020) as the study of human–plant interrelations, emerged from this legacy of exploration and classification, often privileging utility over reciprocity, knowledge over relation. In response, this paper turns toward an emerging relational vegetal ontology (Parmar, Malone & Young, 2024) to reimagine how we come to know plants by proposing a post-ethnobotanic inquiry that listens, rather than extracts; that relates, rather than categorises.

Situated within the posthumanities (Braidotti, 2019, Braidotti et al, 2022, Braidotti & Hlavaova, 2022, Haraway, 2006, 2017) and post qualitative inquiry (St. Pierre, 2022, 2018, 2014) we propose a research praxis that reimagines human-plant relations not as data to extract but as kin to relate with. This reorientation gestures toward a decolonial, posthuman approach informed both by contemporary plant science and ancient Indigenous knowledge systems, is an effort to attune more closely to ancestral ways of knowing, and to co-compose more ethical and symbiotic futures with plants. Grappling, with the challenges of making visible the often-hidden life of plants; we intend to engage with plants not as an anomaly but as our research collaborators. The task of the paper is to plant new seeds in a turbulent yet fertile soil that we intersperse with vegetal movements of scent, texture, sense, appearance, growth and community. While this resonates with multispecies ethnographic studies, post-ethno-botanic methodology supports a specific emphasis on the planty entanglements, through an unshackling of colonial histories. We share data generated with children and their families in a botanic garden, that is rich in diverse plant life. We also include autoethnographic vignettes from the authors, that are assigned as a means to expose specific insight to disrupt the positivist, humanist, colonial narrative (Jackson & Mazzei, 2018) with a posthuman stance of symbiosis and collective understandings.

Acknowledging botanic erasure in science

Plant life has long been silenced in western science. Colonial botany, under the guise of discovery and classification, erased the relational worlds of plants and the communities who knew them. Gibson, (2024) identifies that many botanical discourses “fail to recognise the contributions of historically marginalised groups of people through a process of systemic depletion and erasure” (p.16). Silenced female botanists, or those whose ideas and research uplifted the work of their male counterparts in the process of colonial botany, yet whose names were never included (Schiebinger & Swan, 2007; Subramaniam, 2024); Ogilvie, 2004), are just one group. Yet perhaps the most destructive erasure was the colonial removal of First Nations and Indigenous names,

knowledges, and experiences of plants, replaced by European taxonomic systems and extractive logics that imposed new regimes of ownership, control, and management (Smith, 2021; Nunn, 2019). This epistemic violence redefined relational understandings of plants, transforming living beings into specimens, property, and economic resources within imperial networks (Brockway, 1979; Schiebinger, 2004). In Australia particularly, the home where the authors reside, the colonial botanists effaced "Aboriginal and Torres Strait Islander contributions to white Australian botanical history. They sometimes erased First Nations knowledge entirely" (Gibson, 2024, p.16).

While the nurturing and cultivating of plants by humans for maintaining food sources is often framed as emerging around 10,000 years ago with the advent of Western agriculture (Bellwood, 2005), this linear narrative privileges Eurocentric histories. Such accounts obscure other ancient and sophisticated systems of plant cultivation and ecological care practiced by Indigenous and non-Western societies long before and beyond this timeline (Kimmerer, 2013; Scott, 2017; Tsing, 2015). First nation and Indigenous stories worldwide reveal a long lineage of human-plant relations and reciprocity. In his compelling book *Dark Emu* Pascoe (2018) provides an alternative depiction of Australian Aboriginal plant relations that was disrupted by British settlers. He paints a rich picture of the agriculture and domestication with a range of plants species by Aboriginal people; sowing, harvesting, irrigating, storing, cooking. Australian and Torres Strait Islander peoples also traded and shared knowledge across vast lands and oceans of plants for medicinal, cultural and ceremonial uses (Tutt, 2021). Stories of intimate plant-human relations and practices in Australia and around the world reveal a long history of sophisticated knowledges and understandings researched and shared about plant ecologies, allowing always for a deep respect for taking and replenishment.

Alternatively, the science we came to call 'natural sciences' became a very narrow patriarchal project, within a short period of time in history, that Vandana Shiva has described as mechanistic and reductionist (Shiva, 1989). This model laid the groundwork for modern humanism, wherein the human subject was elevated as not of nature but above it. The rational, autonomous, and superior human separated to the material world. This dominant stance preceded and prepared the ground for the Industrial Revolution, which drew upon such exploitative knowledge to declare all of nature including plants, ripe for human consumption and extraction. In contrast, the vital knowledges of conservation, protection, rejuvenation, and regeneration, long held and practised by women, Indigenous, and tribal nations were ignored, suppressed, or erased (Shiva, 1989). As Gibson (2024) so eloquently writes in *Dark Botany*, "…there is darkness in the history of botanical discourses and botanical practice. Plants have been used and abused, reduced, and flattened—and weaponised" (p. 26).

This exploitative story illuminates how ancient plant–human relations were thwarted by the colonial desire to contain, capture, name, and control plant life. In this process, humans lost much of the allure, love, and wonder once felt for plants as kin deeply embedded in ancestral life. To rekindle this love and connectedness with more-than-human relatives through rich inquiry becomes an act of decolonisation. A decolonising research methodology challenges Eurocentric research traditions that have long undermined local knowledge and the lived experiences of

marginalised communities, emphasising instead an understanding of the human as emergent through relations - *as becoming* (Keikelame & Swartz, 2019).

During the writing process we found ourselves entangled with the in-between tension of another erasure as we toyed with our usage of romanticised words and terms. Those tender signifiers of care, beauty, and wonder surfaced and receded in our shared writings, testing the borders of what was permissible within academic discourse. We kept editing them out, then letting them return, uncertain of their place. To name love, awe, or long within the lexicon of science felt naïve, even indulgent. Yet, these words lingered, haunting the margins, waiting for us to notice what they were asking of us. In the process of writing this paper, we began to unlearn the scientific reflex to discard what does not fit into neat boxes. We came to understand that what resists containment, the unquantifiable, the affective, the relational, carries its own kind of data. As Reed (2021, p. 13) reminds us, *"Western scientific language uses words that portray the living world as inert, mechanical, and determinate".* Such a vocabulary flattens the vibrancy of life, muting the emotional resonances that words like passion, wonder, awe, or melancholy hold. Objectivity, so often privileged as truth, silences the vibration of relation, the pulse between the observer and the observed.

Rautio and Vladimirova (2017) for example, recognise in their research with children and snow, "we have been trained to avoid love and attachment in (our) research" (p.29), therefore, to befriend the other-than-human as "a research ally is reschooling yourself to be able to get attached and to work with affects in research" (p.29). A new generation of ethnobotanists have emerged to reconceive plants as social beings with agentive efficacy, and they too play with poetic words and phrases (Nazarea, 1999, Ryan, 2015, Miller, 2019, Hartigan 2019), plants who communicate, move, enliven and cooperate with mutual symbiosis. The significant research with tree networks for example exploring how "trees communicate by means of olfactory, visual and electrical signals" (Wohlleben, 2016, p.12). Those signals travel along the tips of plants roots, tips which act in similar ways to nerve cells in animals (Gagliano et al., 2017) and fungi with interconnected relationships between fungi and plants, and how fungi can influence plant behaviour and communication (Sheldrake, 2000a). Plants are also becoming more known as social beings, who create families, communities, ecosystems not just with themselves or their own species, but with other species, animals, fungi, earth, rocks, other inanimate materials (Gagliano, 2012, Gagliano et al., 2017; Mancuso & Viola, 2015, Mancuso, 2018; Marder, 2013, Sheldrake, 2020a). And those relations, such as certain plants and fungi exchange 'knowledges' about the value or effect of changing plant relational ties to sustain their own diverse lively existence. Plants, count, learn and remember. They nurse sick members. They warn each other of danger by sending electrical signals across fungal networks (Wohlleben, 2016). And for reasons unknown, other than to imagine that tree elders are sharing ancestral knowledge to their young, they keep ancient tree stumps alive for centuries by feeding them a sugar solution through their roots. As researchers, working with this contemporary vegetal knowledge, we want to be social with trees to be fed and made alive with the possibilities of deep relational becomings. We are aware that anthropomorphising plant becomings offers challenges but as Vicki Kirby argues "there is no radical absolute boundary line between things, including between human and non-human, that

humans have no more monopoly over what counts as intelligence, language or even scientific inquiry than anything else" (Kirby, 2011, p. 103)

For us this means co-creating openings for establishing plants as research companions and teachers. The children in this study also reawakened us to another kind of knowing that is captured in some of the vignettes in this paper. Through their words and gestures, they spoke the language of animated kinship with ease. In their world, the trees whisper secrets to one another; the rain cries happy tears; the wind listens. They offered us a poetics of relation, a way of seeing the world as alive, communicative, and full of feeling. Their speech was not naïve; it was ontological. It invited us to listen differently, to sense the world as sentient, immanent and responsive.

In attending to these moments, we realised that post-ethnobotanic inquiry is not only a methodology, but a practice of care and onto-epistemology rooted in reciprocity, love, and family. The children reoriented our relationship with romanticism. What we had once erased as excess emotion revealed itself as an ethic and a way of being with plants, with children, with the world. Romanticism, reimagined here, is not sentimentality but a re-turning toward the relational. We unapologetically own our romanticised language. Whether its love, enchantment or wonder because these words "harbour potentials for a decolonizing praxis, pitched against human domination of nonhuman others" (Rigby, 2020, p.5) and play a pivotal role in exposing historical erasure of plants contribution to our survival. "Re-evaluating romanticism through a decolonial lens", helps us draw from a "range of other approaches including Indigenous studies, multispecies relational studies and biosemiotics". We have come to recognise this as a sympoietic resistance "to hegemonic constructions of human subjectivity and instrumentalizing constructions of 'nature'" (Rigby, 2020, p.5).

Unlearning and relearning with science

The first vignette captures this awakening for unlearning with science as Sneha reflects on the impact of her science training and her worldview expressed in the Vedas, Upanishads, and later Ayurvedic and Puranic texts (Chakravarthi, 2007) that know plants as part of an interdependent web of life animated by the same cosmic essence that pervades all existence.

Becoming medicinally viable – Sneha

> *As a plant scientist I was immersed in the humanist practices of collecting and collating plants, testing the optimum conditions for growth and production. Researching the effects of salinity and draught stress on a plant named Andrographis paniculata, in Maharashtra, India alerted me to the pressures of vegetal stress where plants are pushed beyond their limits to test the boundaries of capitalistic production methods.* These experiments with plants, soil, and salt supported previous findings that stress-resistant plants are better able to survive in challenging soils, and that such conditions enhance their medicinal properties.
>
> *The preferential selection of this plant was enabled by ethnobotanic demands for the medicinal benefits of such plants seeking anti-cancer and immunity enhancing properties*

> *that are enabled by a secondary metabolite produced by the plant called andrographolide. Inflicting stress on plant species physiologically, by reduced water and increasing salt levels elicited the concentrations of andrographolide in the plants and helped in the overall growth, vigour and produce of the plant. I was expected to use the plant to benefit human wellbeing. I remember convincing myself and the plants in my care that the stress I was inducing, in the form of drought or salinity would also be for their benefit, since they will adapt and prove themselves to be these robust stress tolerant varieties. I would talk and apologise to the plantlets, a practice imbibed in me due to my Vedic culture* where plants (vanaspati, oshadhi, vriksha) are not seen as inert or passive matter but as animate beings, living entities with prana (life-force), consciousness, and agency. *When the plants in my study endured the stress and came out more robust than ever, I was glad that the project was over and that my experiments did not seem to harm them, though it did test their limits. I could not have survived this without having the connection I had with my plantlets and without affirming in my mind that they know why I am doing this and that they had forgiven me for my experiments.*

Acting with optimistic energy through the saline water, the soil, the conditions, and the plants, a 'sympoietic system' emerged (Haraway, 2016). These elements became entangled through ethnobotanical understandings of culture and science, teacher and scientist. The agency of the salt, applied in varying concentrations while watering the plantlets, worked to increase the proteins that protect them against osmotic stress. The water, carried from the tap and supplied in variable amounts and schedules, travelled through the plantlets' bodies via capillarity, transporting nutrients and fulfilling its physiological role before transpiring.

Through these rhythms of stress, care, and experimentation, the plants became entangled with a human, one who felt joy that this circulating energy culminated in robust, stress-resistant plantlets. Yet, these experiences also generated ethical tensions. As a plant scientist, Sneha now reflects on ethnobotany in ways that resonate with Stewart (2021): "For me, to critique science is not an attack but an act of love: I want science to be better, because only at its best can science give humans its best version of the truth about our world" (p. 2).

Learning and unlearning ethnobotany

Within western plant discourses the discipline of botany and the methodology of ethnobotany, as a practice within it, was circumscribed within certain protocols and procedures (Hartigan, 2019); it did certain things with and to plants and people. Rather than a reciprocity of relations, as was evident in ancestral human-plant relations, it focused on taking rather than giving. Through ethnobotany, certain types of 'dominant' and reductionist plant knowledges, emerged. This colonial plant science history while short lived in the context of the planet's evolution; was based on a methodological paradigm of extraction, reductionism and anthropocentricism (Nolan & Turner, 2011). Most ethnobotanic inquiries of plants were shaped by a desire for economic exploitation.

The historical antecedents of ethnography and ethnobotany date back to classical antiquity in the

writings of Herodotus and Tacitus about the Egyptians, Scythians, and Germanic tribes (Launay, 2010 as cited in Robben and Shluka, 2015). As an endeavor of the enlightenment and the accumulating of a western scientific view of plants, the tradition of the medieval and colonial botanist and ethnobotanist, was voyaging the seas to Indigenous people's use and sustenance of plants were overlooked, however plants were collected as a resource for food, medicine and textiles and to fulfil the desire for exotic species in the homelands such as pineapples and bananas. Plants, seeds and plant products spread across the globe in a geopolitical system of trade with little payment to Indigenous peoples (Subramaniam, 2024; Sponsel, 1992; Schiebinger & Swan, 2007).

Inspired by the exhibition of botanical objects at the Chicago's World Fair, in 1896 John W. Harshberger coined the term 'ethnobotany' as a way of describing the emerging scientific field within botany for studying "plants used by primitive and Aboriginal people" (cited in Gurib-Fakim, 2006, p.11). Ethnobotanic gardens, later termed 'botanic gardens', came to be known as the site for the repository of those plants collected by botanists as they voyaged around the globe. The field of ethnobotany and its associated derivatives ethnoecology, and plant ethnobiology emerged as a means for 'documenting human cultural perceptions' (most notably Indigenous and First Nations people) of plants and plant uses, environmental systems and species conservation. Expanding this definition Prance (2007) articulates in recent times a shift from a purely 'scientific' or 'botanist' perspective, ethnobotany "uses, knowledge, beliefs, management systems, classification systems and language that both modern and traditional cultures have for plants and their associated terrestrial and aquatic ecosystems" (p.1). The intentions of ethnobotany were to study the new world by recording cultural oral traditions (Nunn, 2019) of Indigenous communities, however this soon was practiced as a process for the 'extraction of knowledge' for the colonisers to exploit the medicinal and economic potential of plants and Indigenous lands.

When used before the name of academic disciplines like botany, zoology and ecology the prefix ethno or ethnois' is a common prefix meaning "the way other people look at the world" (Martin, 2004, p.31) and implies that researchers are exploring local people's perception of cultural and scientific knowledge of land, flora and fauna. Ethnobotany has always been focused on the systemic study of how particular people encounter and use plants and what are their intentions. Evidential accounts by ethnobotanists listed culturally important plants sometimes adding Indigenous names and knowledge but mostly renaming using taxonomies and colonial naming systems to describe and amplify advances in botanic-scientific experimentation (Nolan and Turner, 2011).

These Anthropocentric colonising practices of taking plants form their native habitats to western ones, were said to be enhanced by the work of botanists identifying species of importance and the ethnobotanist to some extent focusing on the critical cultural and ecological role plants played in Indigenous cultures, but through an anthropocentric lens. Biological plant science evolved greatly as a discipline through these practices. Moving from knowledge production concerning botanical species towards positivism and imperial science was closely tied to the rise of economic botany, which was one of the primary considerations in early colonial expeditions and bioprospecting of

plants (Schiebinger, 2007). We began to see alongside of the scientific knowledge areas of ethnobotanic, plant ethnographic and even ethnoecological accounts being forged not by purely scientific fieldwork but propagated and appropriated from traditional ecological knowledge systems.

The role of ethnobotanists was therefore to accurately document the 'botanical knowledges' embedded within specific cultures (Martin, 2004). Harshberger's methodological framing of ethnobotany (as cited in Gurib-Fakim, 2006) established detailed protocols for objectifying field notes and standardising plant collection practices, with toolkits and techniques that continue to be taught in contemporary science and botany classes. Quantitative ecological methods, such as statistical measurements of diversity and abundance, have long been central to ethnobotanical research. Quadrat studies, for instance, were used to measure the frequency, distribution, and abundance of plant species, producing numerical estimates of forest products and botanical resources. These methods, together with species area curves, enabled researchers to speculate on the diversity of species used by different cultural groups (Begossi, 1996; Gaoue et al., 2017; Martin, 2004). Yet such ecological approaches, by reducing plants to data points, have tended to objectify them as mere 'things' of analysis, products and resources within an anthropocentric framework. How, then, can a mark on a spreadsheet or a single teardrop capture the complex more-than-human assemblages that compose the very ground beneath our feet?

Decolonising ethnobotany

Ever since its inception, the field of ethnobotany has incorporated concepts from a range of disciplines such as anthropology, linguistics, agriculture, archaeology, biochemistry, genetics, horticulture, evolution, economy, ecology, conservation biology, and botany. Atchison and Head (2016), called for a rethinking of ethnobotanical methods to highlight how traditional ethnobotanic methods have negated the long continuous link of plants to pre-colonial 'other' and the field was still limited in its acknowledgement of deeper non-western relations and knowledges:

> While ethnobotany has contributed to opening up knowledge of the world beyond dominant Western world views in the form of traditional Indigenous perceptions and experiences, it stands accused of privileging these same knowledge systems through positivist quantitative methods which re-articulate the 'objects' of study (p.179).

In the early twentieth century Robbins, Harrington, and Freire-Marreco expanded the emerging field of ethnobotany to shift toward Indigenous knowledges, opening to vegetal materialities and cosmological intricacies (Gurib-Fakim, 2006) This colonial history according to Sheldrake (2020b), suggests that Richard Evans Schultes luminous photographs and meticulous field notes from his twelve years in the Colombian Amazon, beginning in 1915, ignited a new generation of ethnobotanists. His work brought visibility and legitimacy to Amazonian healers and Indigenous specialists, whose expertise had long sustained ecological and cultural continuity (Nolan & Turner, 2011). Yet, even as Schultes' practice was nourished by Indigenous understanding he remained bound to a mononatural scientific cosmology. This worldview, as Sheldrake (2020b) notes,

distanced him from the relational epistemologies of his Amazonian interlocutors. In this tension, the positivist tendencies of Western science once again overshadowed the living knowledges that had made his discoveries possible. These early travelers therefore planted the seeds for the emergence of later ethnobotanists such as Schultes (Nolan & Turner, 2011) who in the spirit of advancing research methodologies, adopted more anthropological style methodologies such as those being used by ethnographers Margaret Mead and Gregory Bateson (Jacknis, 2020).

To understand human-environment interactions and culture based human perceptions of plants, ethnobotanists often turned to ecological and plant breeding related theories and methodologies (Begossi, 1996; Sponsel, 1992). Ethnoecology for example, being multidisciplinary in its endeavor became the study of human knowledge, perception, classification, and management of natural environments (Sponsel, 1992). The emergence of ethnoecology, while colonial still in its inception, allowed space for connecting traditional ecological knowledge in the wake of current environmental crisis, to find solutions of environmental management systems drawing on Indigenous and First Nation people's experiences (Nolan and Turner, 2011). This shift in focus was supported by the consideration that Indigenous cultures evolved by passing sophisticated knowledge from generation to generation with the understanding they were dependent on plants for their survival (United States Department of Agriculture, 2023). "Indigenous people" writes Salmon, (2000, p. 1330) believed that "they live interdependently with all forms of life. Their spiritual, physical, social, and mental health depends on the ability to live harmoniously with the natural world". It is this deeper connection that some ethnobotanists began feel to be enchanted by. "A sweetgrass braid is burned to create ceremonial smudge that washes the recipient in kindness and compassion to heal the body and the spirit" (Kimmerer, 2013, p. 301). Through studying how Indigenous people interact with plants, ethnobotanists focused their attention to human sociability and needs (Nolan and Turner, 2011) often neglecting important relational kinship aspects of Indigenous sensitivities and reciprocal ethics and often backgrounding Indigenous authority to these knowledges (Cumpston et al., 2022; Sheldrake 2020b).

The second vignette turns to the epigenetics of the British Empire, tracing how colonial processes of collecting plants and natural resources were not merely historical acts, but inherited material-discursive patterns transmitted through culture. Tracy reflects with these practices of appropriation of objects, species, and subjects of desire that inscribe the logics of possession and extraction into both human and more-than-human lineages. Plant-human relations, situated within these colonial ontogenies, expose how botany was cultivated through imperial epistemologies of dominion, ordering, and control that continue to reverberate through contemporary ecological thought.

Becoming Colonialist



Figures 1, 2 and 3. Becoming Colonialist. Photo Source: Tracy Young

The roots of colonialism are embedded through my DNA and fortified by a London childhood with regular visits to The Royal Botanic Gardens in Kew and London Zoo. These were the prize showcases of the British Empire with collections of curated plants and animals taken from the 'New World' that was discovered only when colonial forces chose to see that such ancient lands existed, declaring them to be new. These collections reveal a history deeply entwined with colonialism, with trade that was key to the imperial project and designed to increase Britain's prosperity.

My colonising ways became known to me when a friend who grew up in Mumbai, India noticed the various curated collections of shells, seed pods, travel souvenirs and plants, in my house, lovingly naming me as "the coloniser". These practices of collecting/taking/stealing were familiar to her, but unconsciously part of my aesthetic and the history of individual collecting, encapsulating the larger story of how Britain 'collected' an empire in India and beyond. I recognised in my aesthetic of collecting what I had thought of as harmless curiosity the echo of a larger history: the British compulsion to catalogue, possess, and order the world. Postcolonial theory prompts me to face myself in the mirror of history and yet during the Covid-19 pandemic, along with Millennials who documented their rare and expensive plant collections on social media, I was compelled to collect hundreds of houseplants. I curated them on shelves, with carefully chosen pots, artificial light, forcing them to climb upon trellises and moss poles to suit my botanic aesthetic order. These desires to collect the world that sustained the colonial system, are awkwardly still with me.

Subramaniam (2024) reveals how the British empire also ignored any trace of plant liveliness through reductionist Latin naming systems and descriptions of plant sexuality which aligned with European gendered values. Albuquerque & Hanazaki (2009) contend the challenges for ethnobotanic methodologies was that "ethnobotanists have much to learn not only in terms of

insight into biological evolution, but also in terms of cultural evolution, in much the same way as other interface-disciplines, such as cultural ecology and ecological anthropology" (p.657). The need to reconceptualise ethnobotanic methodologies therefore requires a reframing and decolonising of the assumptions, practices, and structures that often guide these research methodologies "while retaining the Indigenous and traditional theories and knowledges that informed them (McGregor et al, 2018 p.2). By resisting the epistemic legacy of colonisation (Thambinathan & Kinsella 2021) ethical considerations are at the forefront of resisting power dominion and hyperseperation of nature and culture.

> The ethical challenge of decolonization illuminates a ground for powerful presence. against domination it asserts relationality, against control it asserts mutuality, against hyperseparation it asserts connectivity, and against claims that rely on an imagined future it asserts engaged responsiveness in the present (Rose, 2004, p.213).

Posthuman plant inquiry

A decolonised, relational vegetal ontology unfurls through what Parmar, Malone, and Young (2024, p. 247) describe as "a convergence of theories, a vegetal ontology views plants as life inhabiting, dynamic entanglements supported by vitalist forces and shared agentic ancestral relations". Such an ontology resists separation; it roots theory in the fertile ground of relation, where knowing and being are co-composed through the slow, attentive gestures of coexistence. Drawing from posthumanist, new materialist, and Indigenous philosophies, a vegetal ontology gestures toward modes of thought that grow with, rather than about, plants, where the world is not merely observed but felt through the shimmering exchanges of life. Extending this into environmental education, Parmar, Malone, and Young (2024) invite inquiry to become a practice of ethical attunement: a way of thinking-with and becoming-with plants in the shared work of living well within more-than-human worlds.

This reframing of ethnobotanic methodology as a post-ethno-botanic inquiry is a decolonial act, an opportunity to expose the erasure of traditional botanic ways of knowing and reconstituted a reciprocal, relational mode of human-plant becomings. Post qualitative inquiry, enables a reimagining and re-creating of 'doing' research and 'being' in relation with plants differently that are "iterative, recursive, messy" (McGregor et al., 2018, p.3) reconfiguring of ethnobotanic methodology. A post qualitive unfolding for thinking and doing, theory and practice are the inquiry, not an analytical afterthought and moving away from humanist and positivist research concepts of 'problem', 'design', 'analysis', 'representation', to a reimagining of a more sophisticated and richer human-plant relations, histories, and inquiries We recognise the value of aligning ethnobotanic methodologies with posthumanist theories and post qualitative inquiry to acknowledge the messy, dynamic, open-ended ways of engaging with the more-than-human, which go beyond anthropocentricism (Young et al, 2022). We experimented with sympoietic ethnobotanic practices with an emerging vegetal ontology. While it is a difficult prospect to develop ways of conducting research collaboratively with plants as participants (Atchison and Head, 2016), the fluid, generative, dynamic methodologies in the posthumanities offer ways of getting closer to this co-production. Our shared knowledge of working with posthuman theories

encourages us to move beyond orthodox research, to find new ways to enact a post anthropocentric world. Through practices of decentering the human we are endeavouring to disrupt anthropocentric modes of plant inquiry by rethinking, "the subject, data, voice, narrative, and meaning making" (Jackson and Mazzei, 2011, p. 722).

Motivated with the desire to unfurl, disrupt and dismantle human exceptionalism and superiority as the core of human relations with plants, post-ethno-botanic methodologies consider plant voices and participation. A reconsidered ethnobotany as an enmeshed methodology based on Indigenous knowledge systems, that are high in prescription for plant sentience, agency and relational ontologies (Hall, 2011; Kimmerer, 2013; Rose, 2013; Reed, 2021). In addition, we have argued the importance of questioning the adequacy of methodological approaches underpinning ethnobotany in their capacity to address the question we are now asking in contemporary society. All the while our shift to a post qualitative inquiry entices us to trouble these 'data collection' methods that privilege colonial human voices (St Pierre, 2008, p. 221) we seek to disrupt past legacies, to decolonialise plant inquiry and experiment with new possibilities.

Post qualitative inquiry draws its methodological inspiration from poststructuralism (St. Pierre, 2012, 2024) "with debates concerned with the limitations of how humanness has been thought in dualist ways that privilege certain identities" (Fullagar, p. 248). The focus of post qualitative inquiry is to move beyond humanist dualist categories such as culture/nature, human/non-human, object/subject by raising different ontological questions It also shifts from the theory-method-practice divide, to disrupt the status of method as data collection as tools for producing knowledge.

The third vignette slows the pace, showing how post qualitative inquiry considers time, bodies and matter about "through entanglements of human and non-human bodies, affects, objects and cultural practices" (Fullagar, p. 248). By turning attention toward the subtle material movements and affective exchanges that unfold within a community garden, beneath the canopy of ancient oaks, where a child and a dog linger in play and wonder, Karen traces the histories of travelling species, following how bodies, seeds, and stories migrate across time and territory. Wren, Poppy the dog and tree become entangled as multispecies companions, their gestures and actions threading together a shared ecology of becoming.

Befriending oak – Karen

Figures 4, 5, 6, 7, 8 and 9. Befriending oak. Photographs taken by Karen Malone

The sounds of rubber boots crunching on acorns and autumn leaves, the touching of bark, the weather, atmosphere, dog, pink tulle, child. Colours are intensified by the sun and shade, deep green leaves against a heavy brown bark. Oak trees have cultural significance local folklore as symbolising strength and resilience and a keystone species for many global ecosystems. Oaks provide food and shelter for innumerable species around the world. Many large, old Oaks are under immense threat due to climate change. Why Poppy do you sniff so intently at the tree? Maybe there are possum or bird families and babies living up in the tree hollows? Poppy barking jumps paws on bark barking, almost as if she wants to climb the tree. Wren "stop, that's a big tree, you can't climb up Poppy. You are halfway up but you can't climb up". Poppy goes around. Wren hugs the tree; her small arms barely stretch even a quarter of the girth. Then she starts jumping between the tree roots while running around the big barrelling trunk. Mother tree is a large Algerian Oak, Quercus canariensis*, fully grown she now stands over 30 metres high with her large canopy spreading just as far in every direction. They say an Oak tree spends 300 years growing and 300 years slowly dying.*

"Pop let's look closely at the tree, come on Pop". Wren now trying to climb "eh, eh but it's too high. I can't climb it either". Looking at the gaps in the trunk of the tree, "mm what's living in there?" She has been home to lots of bird, possums and insects, and over her 150

years I wonder how many children and dogs have played under her shady canopy. Poppy comes back and is digging at the hole in the roots "Poppy don't dig in there; you might hurt the roots". Tree roots, bark, branches, leaves, sap, acorns, lawn, path, the wide tree trunk, shades the warming sunlight, creating a soft dappled light. Originally rooted in the soils of Algeria and the Mediterranean, her Mother Tree wisdom has adapted and deepened since taking root in St Vincent's Gardens, an inner-city sanctuary designed and planted in the 1860s.*Wren picks up an acorn and notices a seedling, then another and another. Wren points "Poppy look these are her babies". She opens her hand and reveals the acorn. Poppy grabs it, they race away. She probably came as a small seedling on a boat nurtured and grown after acorns were collected from exotic lands, with ethnobotanic assistance, mimicking gardens of homelands for residents of the colony.*

Cultivating post-ethno-botanic inquiry

How then can we cultivate new ethnobotanical studies that embrace the symbiosis that sees and knows the more-than-human collective. How can researchers and educators avoid the pitfalls of western ethnobotanics in educational contexts (Osgood 2022, Gibson 2024) and invite pedagogical encounters with plants as collaborators in learning. This has not gained as much attention, however Beasley's (2021) Indigenous plant curriculum and Kimmerer's (2013) reciprocity pedagogy illustrate ways to reconfigure science education with Indigenous knowledges that focus on botany, offer helpful examples.

While drawing on both contemporary scientific and traditional knowledge systems, our aim is to cultivate a holistic intersecting methodological framework for studying the intricacies and complexities of human-plant relationships. We propose to bend the incommensurable forms of knowledge (Stewart, 2021) in order that our accounts of research move us beyond a focus on human exclusivity. By pacing human-plant relational studies within a post-ethno-botanic framework, we seek to disrupt the inequitable power relations between the human and the more-than-human to address equitable and ethical multispecies relations. By attachment, befriending, being empathetic, we initiate deliberate acts to "enable access to a wisdom of other-than-human world" (Rautio and Vladimirova 2017, p.26). It rejects dominant methodologies where plants are 'objects' outside of 'us'; methodologies that insists we relinquish our love of plants and to move in the world unattached to these life-giving kin.

Indigenous and Vedic philosophies that created Hinduism adopt animistic worldviews focus on kinship and ethics of connection between all beings and these ideas of flattened ontologies have taken hold on the plant turn. David Abrams (1996) coined the term 'more-than-human world' while elucidating the relation between the human body and the breathing Earth as nature exceeds humankind. While following the fate of the matsutake mushrooms, Anna Tsing (2015, p.4) infamous book *The Mushrooms at the end of the World* sketches the "open ended assemblages of entangled ways of life, as they coalesce in the co-ordination of temporal rhythms and spatial arcs". Michael Marder (2013, 2017), through his various works, has revealed how plants perceive their environments and are in a constant and lively discourse communicating in turn with an array of multiple species entanglements. Plants have much to teach and make great teachers if we are not

blind and deaf to these communications. Describing plants as the "Brilliant Green", Mancuso & Viola, (2015), discuss how humans failed to acknowledge these wily protagonists as active, agentic, sentient communicators. Peter Wohlleben (2016) a year later unfurls the "wood wide web" to expose how trees experience pain and have memories, have friendships in terms of symbiosis with other plants, fungi and even microbes as also live with their off springs; often supporting them with nourishment. Monica Gagliano et al., (2017) supporting these sentiments, elucidates through her work on plant communication and cognizance to argue for plant sentience. Natasha Myers (2017) adopted the term *planthroposcene* to paint a picture of human-plant coexistence, a recentering of plants as equal partners in cultural, social and the ongoingness of plants as central contributors to a public politics of life. Theresa Miller (2019) through her multispecies ethnographic work in Indigenous Brazilian communities explores how kinship develops between the Canela people and plants through intimate, multi-sensory, and embodied relationships that enfolds the nurturing, loving relationship between people and plants, offering a thought-provoking model for supporting multispecies survival and well-being with a focus on plant kinship networks. While rethinking the vegetal through art and culture Ryan (2015) through his various works on posthuman plants and corporeal plant aesthetics glorifies human-plant links beyond the exclusivity of the unidirectional dyadic subject-object relationship.

Education is also embracing multispecies connectedness with lichen teachers and childhood tangles (Osgood (2021) arboreal methodologies (Osgood et al, 2023) and a focus on trees as teachers (Kraftl et al, 2024). These examples of plant-human as more-than-human complex coexistence support the direction of post-ethno-botanic methodologies. While these authors push us towards perspectives ranging from accomplishments of modern science to post-anthropocentric accounts to descriptions of agentic vegetal worlds, with post-ethno-botany we want to achieve a doing within a vegetal ontology which threads modern vegetal science and posthumanism, with Indigenous perspectives. Post-ethno-botany in this way, diverges from, and is shaped by sensorial and multispecies ethnography, critical plant studies, feminist science and technology studies, philosophical and biological theories/philosophies on plant mind and plant agency. In our research with children and ecological elders has given rise to researching plant-human relations by inviting the plant into the inquiry and how we can invite as active participant in research is central to our continued thinking.

The plant turn is shifting how plants are known "in the botanical sciences, where more-than-human modes of sensing provide new insights into plant worlds (Atchison and Head, 2016, p.179). Decolonising and realigning ethnobotany has the potential for responsive, dynamic ways of igniting knowledge and research, through coming to know human-plant relations as entanglements with life. This realigning bears new insights as a lens of relationality invites new ways of knowing plants and the synergies for planet health. In a post anthropocentric world that is bound by positivist restraints (Malone, 2016) there is a need for a reimagining of how to contest anthropocentric views of plants with much of the power of this change coming from within science itself. Radical rethinking is therefore moving the methodology of ethnobotany away from its positivist histories and practice (Lemm, 2022) toward a relational and vegetal ontology backgrounded by contemporary sciences that acknowledges plant sentience and agency.

Symbiosis and interspecies relations

Post-ethno-botanic methodology is consequently informed by the nature of ecological complex assemblages and contemporary plant science. Ecosystems are never linear nor simple. Everything affects everything else (Sanders et. al, 2022). Living entities like plants, animals, microbes, are therefore active participants of various complex ecological entanglements forming multispecies ecological communities. Organisms find collaborative ways to share worldly space and hence are connected through these connections, shaping and guiding their developmental, social and behavioural processes. (Sheldrake, 2020a). Human centric inquiry mostly blinds us to these entanglements and their components. If we accept Tsing's (2015) notion that human-nature is always in interspecies relationships, plants must be key players too. When ethnobotany is located solely within scientific methodologies creating detailed profiles of a lone plant/ plant family/ plant group extracted from its context the multispecies ecological community of the plant of which it is deeply embedded is lost or remains hazy in the process. To engage with the complexity of the more-than-human, to account for these intra-actions that take place within and across the species, the means to consider plant lives entangled in ecological complex assemblages, will be essential.

By "paying attention and noticing multispecies communal spaces and engaging in sympoietic ethnobotanic practices like drawing, storying, walking, climbing, feeling, imagining, observing and noticing" (Parmar, Malone and Young, 2024, p. 251) we employ care and knowing child-plant relations differently. In the passage below, we document how we included a beautifully illustrated picture book (Wild at al, 2020) from Aviva Reed, one of the ecological elders in our child-plant study as a provocation for child-led dialogue as they explore symbiosis in Fern Gully, a rainforest area within the Melbourne Royal Botanic Gardens.

Loving and deadly symbiosis – Sneha


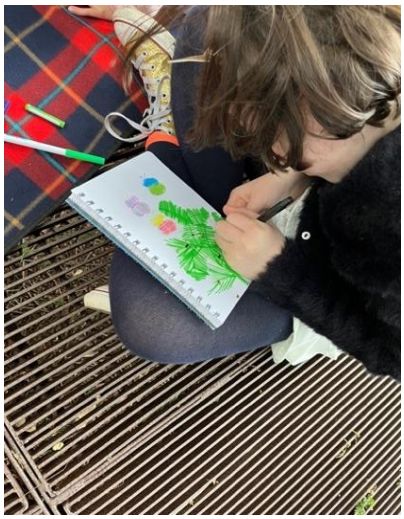

Figure 10, 11, 12 and 13. Photographs taken by Sneha Parmar

> Violet spots a Chilean Wine Plam tree on our way to Fern Gully in the Victorian Royal Botanic Gardens. The children notice something moss-like with a silvery colour growing on the bark of this tree. I tell them that this is a lichen. “Lichens are a very good example of friendship/ symbiosis between plants. Lichens hold both an algal component and a fungal component and themselves grow on the barks of big trees.” Looking at a few nicks on the stem probably done to discourage climbing possums, Violet asks “So, if the bark is cut, all three are disturbed?” “Of course, and by the way I don’t mind the possums climbing up too!” the Plam tree exclaims. It’s tricky how cutting one thread can spoil the entire fabric of life! Near the fern gully the story of mutualism in the ‘Forest in the Tree’ book by Aviva Reed, (Wild et al, 2020) inspires us to meander through the gully in search of such symbiotic connections. The children find several friendly relations and capture these complex loving worlds in cameras. Some even draw them. Daisy wants to change her drawing because she forgot to draw the sun as the plant’s friend. All the children unanimously decide that bees are probably the plants’ best friends. We discuss how all the trees and bees and birds rely on each other (mutualism), help each other. We consider loving and deadly relations like the predator-prey, host-plant relations and while we are rambling through these possibilities Cookie declares, “the biggest enemy of trees is men who chop them down without reason!”

The discovery of symbiosis was made by Lynn Margulis, an evolutionary biologists’ co-creator of the Gaia hypothesis (Lockwood and Margulis, 1974) who proposes that the Earth is a complex, self-regulating system where living organisms and their inorganic surroundings interact to maintain the conditions necessary for life. All life interacts with its inorganic environment to form a complex, self-regulating, symbiotic system responsible for sustaining and propagating life on Earth. Indigenous people have known and revered these knowledges (Cumpston, et al. 2022), yet these traditional ways of creating symbiotic and reciprocal relations with plants were erased as we have outlined by the legacy of colonialisation (Bignall et al., 2016). In her 1998 book *Symbiotic*

Planet: A New Look at Evolution, Margulis reflects on humanity's perception of its role in Earth's ecology:

> Life is a planetary-level phenomenon, and the Earth has been alive for at least 3,000 million years. To me, the human move to take responsibility for the living Earth is laughable—the rhetoric of the powerless. The planet takes care of us, not we of it. Our self-inflated moral imperative to guide a wayward Earth or heal a sick planet is evidence of our immense capacity for self-delusion. Rather, we need to protect us from ourselves (Margulis, 1998, p.119).

This passage underscored Margulis's view of life as an interconnected planetary process and challenged the anthropocentric notion presented by settlers that humans are the separated and privileged stewards of the Earth. Examples of symbiosis are everywhere, and they feature heavily in our post-ethno-botanic framing. For example, fungi live in the rootstock of trees and plants earning livelihood and connecting the roots in a web through their mycelia (Sheldrake, 2020a) in return for the plant, birds fly from tree-to-tree transporting fungi spores and rain falls on the spores where they spatter back up on the tree, creating pockets for life to begin to grow again. Barad (2010) stresses, “entanglements are not a name for the interconnectedness of all being as one, but rather specific material relations of the ongoing differentiating of the world. Entanglements are relations of obligation, being bound to the other, enfolded traces of othering” (p. 265).

Post-ethno-botany embeds plant relations within the broader view of multispecies ethnographies. Multispecies ethnography which focuses on “relations of multiple organisms (plants, viruses, human, and nonhuman animals), with a particular emphasis on understanding the human as emergent through these relations, those who are becoming” (Ogden, Hall & Tanita, 2013, p.6). Multispecies ethnographies as a post-ethno-botanic apparatus allows a rethinking of human/nature relations by engaging with concepts like object-oriented ontologies, hybrid geographies, and poststructuralist political ecology (Kirksey &Helmreich, 2010). With multispecies ethnographic embedded within a post-ethno-botanic methodology, it has the added focus of decolonising plant worlds embedded in traditional Indigenous knowing.

Concluding fusions and mergers with plantmates

Conclusions are an invention of order, the human desire to tie things off, to neaten thought and bid farewell. Yet Haraway (2016) reminds us to *stay with the trouble* and dwell in the complexity, to companion the unfinished, to resist the temptation of the tidy bow. This inquiry, too, remains unfinished, composting still. The claims we have tended, that science once severed itself from the immanence of plant life, that ethnobotany colonised the vegetal world; are not conclusions, but roots exposed to the air. Beneath the histories of ethnobotanic science, deep tendrils of human–plant potential continue to stir. In the absences and silences of those scientific narratives, we listen for what has been forgotten: the soft, persistent murmur of relational life. In moving from the qualitative to the post qualitative, from the humanist to the posthuman, we have loosened the epistemic soil, where the human no longer stands as the measure of truth (St. Pierre, 2008) and is

entangled in its making. Plant success is contingent on cooperative relationships even with human and other animals to spread seeds across the planet. “Cooperation is the force through which life prospers, and the nation of plants shall recognise it as the first instrument of progress for living communities” (Mancuso, 2021, p139. Perhaps all living communities.

To “respect the uniqueness of the vegetal world” (Irigaray & Marder, 2016, p. 195) is to cultivate an ethics of attention, to dwell with the leaf, the root, the unseen breath of photosynthesis that sustains our own. Lemm (2022) calls this a *vegetal enlightenment* (p. 843), a turning toward an ancient wisdom that Indigenous communities have long embodied: kinship, reciprocity, care, and belonging with the more-than-human (Marder, 2013). To sense plant agency, we unshackle the patriarchal, colonial, and positivist residues of ethnobotany (Haraway, 1990), and nurture the possibilities of multispecies intra-action (Barad, 2007), for these are the dynamic, reciprocal movements that weave us back into the world. The decolonising act is to know how plants as entangled - not as a single species in a genus but as a multispecies colony throughout ecosystems. Moving from the individual taxonomy to the messy populus. Following Margulis (1998), we attune to the microbial, the symbiotic, the connective tissue of all life. When we come to know plants as kin, to love and be in relation with them, we become open to the interconnectedness to the world that Lynne Margulias (1998) claims

> The tendency of ‘independent’ life is to bind together and reemerge in a new wholeness at a higher, larger level of organization. I suspect that the near future of Homo sapiens as a species requires our reorientation toward the fusions and mergers of the planetmates that have preceded us in the microcosm (Margulis, 1998, p.11-12).

A post-ethno-botany is a porous practice, steeped in vegetal ontology (Parmar, Malone & Young, 2024), guided by tenderness and the slow pulse of worldly botanics. It asks of us not to conclude, but to continue to find ethical, caring and decolonialising means for listening, learning, and loving the more-than-human chorus of life.

References

Abram, D. (1996). The Spell of the Sensuous: Perception and language in a more-than-human world. New York: Pantheon Books

Atchison, J., & Head, L. (2016). Rethinking ethnobotany? A methodological reflection on human-plant research. In Bastian, M., Jones, O., Moore, N., & Roe, E. (Eds.) Participatory Research in More-than-Human Worlds (pp. 179–191).

Alexiades, M. N. (2003). Ethnobotany in the Third Millennium: Expectations and Unresolved Issues. Delpinoa 45, 15–28.

Balick, M. J., & Cox, P. A. (2020). Plants, People, and Culture: The Science of Ethnobotany. CRC Pres. https://doi.org/10.1201/9781003049074

Barad, K. (2003). 'Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter', Signs: Journal of Women in Culture and Society, 28 (3): 801–31. https://doi.org/10.1086/345321

Barad, K. M. a. (2007). Meeting the universe halfway: quantum physics and the entanglement of matter and meaning. Duke University Press. https://doi.org/10.2307/j.ctv12101zq

Barad, K. (2010). Quantum Entanglements and Hauntological Relations of Inheritance: Dis/continuities, SpaceTime Enfoldings, and Justice-to-Come. Derrida Today, 3(2), 240–268. https://doi.org/10.3366/drt.2010.0206

Bastian, M., Jones, O., Moore, N., & Roe, E. (Eds.). (2016). Participatory research in more-than-human worlds. Taylor & Francis Group. https://doi.org/10.4324/9781315661698

Begossi, A. (1996). Use of Ecological Methods in Ethnobotany: Diversity Indices. Economic Botany, 50(3), 280–289. http://www.jstor.org/stable/4255843

Bellwood, P. (2005). First farmers: The origins of agricultural societies. Blackwell Publishing.

Bignall, S., Hemming, S., & Rigney, D. (2016). Three Ecosophies for the Anthropocene: Environmental Governance, Continental Posthumanism and Indigenous Expressivism. Deleuze Studies, 10, 455-478. https://doi.org/10.3366/dls.2016.0239

Braidotti, R. (2019). Affirmative ethics and generative life. Deleuze and Guattari Studies, 13, 463–481. https://doi.org/10.3366/dlgs.2019.0373

Braidotti, R., & Hlavaova, M. (2018). Posthuman glossary. Bloomsbury Academic.

Braidotti, R., Jones, E., & Klumbyte, G. (2022). More Posthuman Glossary (Theory in the New Humanities). Bloomsbury Academic.

Brockway, L. H. (1979). Science and Colonial Expansion: The Role of the British Royal Botanic Gardens. Academic Press. https://doi.org/10.1525/ae.1979.6.3.02a00030

Cumpston, Z., Fletcher, M., & Head, L. (2022). First Knowledges Plants: Past, Present and Future. Thames & Hudson Australia Pty Ltd.

De Albuquerque, U. P., & Hanazaki, N. (2009). Five Problems in Current Ethnobotanical Research-and Some Suggestions for Strengthening them. Human Ecology, 37(5), 653-661. https://doi.org/10.1007/s10745-009-9259-9

Denzin, N. K. (2017). Data, in Koro-Ljunberg, M., Löytonen and Tesar, M. Disrupting Data in Qualitative Inquiry, Peter Lang. p.82-91. https://doi.org/10.3726/b11070

Fullagar, S. (2017). Post qualitative inquiry and the new materialist turn: Implications for sport, health and physical culture research. Qualitative Research in Sport, Exercise and Health, 9(2), 247-257. https://doi.org/10.1080/2159676X.2016.1273896

Gagliano, M. (2017). Breaking the Silence: Green Mudras and the Faculty of Language in Plants. In Vieira, P., Ryan, J., & Gagliano, M. (Eds.) The Language of Plants (pp. 84-100). University of Minnesota Press. https://doi.org/10.1007/s12231-017-9389-8

Gagliano, M., Mancuso, S., & Robert, D. (2012). Towards understanding plant bioacoustics. Trends in plant science, 17(6), 323-325. https://doi.org/10.1016/j.tplants.2012.03.002

Gaoue, O. G., Coe, M. A., Bond, M., Hart, G., Seyler, B. C., & Mcmillen, H. (2017). Theories and Major Hypotheses in Ethnobotany. Economic Botany, 71(3), 269-287.

Gurib-Fakim, A. (2006). Medicinal plants: Traditions of yesterday and drugs of tomorrow. Molecular Aspects of Medicine, 27(1), 1-93. https://doi.org/10.1016/j.mam.2005.07.008

Gibson, P. (2024). Dark Botany, Introduction. In Gibson, P., Jöttkandt, S., Sierra, M., Westbrook, A. (eds) Dark Botany. Open Humanities Press.

Hall, M. (2011). Plants as persons: a philosophical botany. Albany, New York: Suny Press. https://doi.org/10.1515/9781438434308

Hamilton, L., & Taylor, N. (2017). Ethnography after Humanism Power, Politics and Method in Multi-Species Research (1st ed. 2017.). Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-53933-5

Haraway, D. (1990). Simians, cyborgs, and women: the reinvention of nature. London: Routledge.

Haraway, D. J. (2007). When species meet. University of Minnesota Press.

Haraway, D.J. (2016). Staying with the trouble: Making Kin in the Chthulucene. Durham, NC/London: Duke University Press. https://doi.org/10.2307/j.ctv11cw25q

Hartigan, J. (2019). Plants as ethnographic subjects. Anthropology Today, 35, 1-2. https://doi.org/10.1111/1467-8322.12491

Irigaray, L., & Marder, M. (2016). Through vegetal being: Two philosophical perspectives. Columbia University Press

Jacknis, I. (2020) Margaret Mead, Gregory Bateson, and Visual Anthropology, Oxford Bibliographies, Oxford University Press. https://doi.org/10.1093/obo/9780199766567-0250

Jackson, A. and Mazzei, L. (2011). Thinking with Theory in Qualitative Research: Viewing Data Across Multiple Perspectives. Taylor and Francis.

Jackson, A., & Mazzei, L. A. (2016). Voice in the agentic assemblage. Educational Philosophy and Theory, 49(11), 1090–1098. https://doi.org/10.1080/00131857.2016.1159176

Jasanoff, S. (2004). Idiom of Co-production, in Jasanoff, S (ed) States of Knowledge, Routledge. pp. 1-12. https://doi.org/10.4324/9780203413845-6

Kale, S. (2024). The Love Language of Plants: Stories of Becoming Written by a Human and Her Plants. California Books, Miami, USA.

Keikelame, M. J., & Swartz, L. (2019). Decolonising research methodologies: lessons from a qualitative research project, Cape Town, South Africa. Global Health Action, 12(1). https://doi.org/10.1080/16549716.2018.1561175

Kimmerer, R. W. (2024). The Serviceberry: An economy of gifts and abundance, Allen Lane.

Kimmerer, R. W. (2013). Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and Teachings of Plants. Penguin.

Kirby, V. (2011) Quantum Anthropologies: Life at Large, Duke University Press. https://doi.org/10.1515/9780822394440

Koro-Ljungberg, M. (2016). Fluid methodological spaces: methodologies matter. In Reconceptualizing Qualitative Research: Methodologies without Methodology (pp. 79-100). SAGE Publications, Inc, https://doi.org/10.4135/9781071802793

Kraftl, P., Ambreen, S., Armson, D., Badwan, K., Curtis, E., Pahl, K., & Scholfield, J.E., (2024), Starting with Trees, Between and beyond environmental education, British Educational Research Journal, 00, 1-20. https://doi.org/10.1002/berj.4099

Łuczaj, Ł. (2023). Descriptive ethnobotanical studies are needed for the rescue operation of documenting traditional knowledge, Journal of Ethnobiology and Ethnomedicine, 19 (37). https://doi.org/10.1186/s13002-023-00604-5

Launay, R. (2010). Foundations of Anthropological Theory: From Classical Antiquity to Early Modern Europe. Wiley-Blackwell.

Lemm, V. (2022). Posthumanism and Plant Studies. In: Herbrechter, S., Callus, I., Rossini, M., Grech, M., de Bruin-Molé, M., John Müller, C. (eds) Palgrave Handbook of Critical Posthumanism. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-04958-3_64

Locklock, J., & Margulis, L. (1974). The Gaia Hypothesis Oxford University Press.

Łuczaj, Ł. (2023). Descriptive ethnobotanical studies are needed for the rescue operation of documenting traditional knowledge. Journal of Ethnobiology and Ethnomedicine, 19(37). https://doi.org/10.1186/s13002-023-00604-5

Malone, K. (2016). Posthumanist Approaches to Theorizing Children's Human-Nature Relations. In K. Nairn, P. Kraftl, & T. Skelton (Eds.), Space, place and environment (3). (pp. 185-206). Springer Singapore. https://doi.org/10.1007/978-981-287-044-5_14

Margulis, L. (1998). Symbiotic Planet: A New Look at Evolution. Basic Books.

Mancuso, S., & Viola, A. (2015). Brilliant green: the surprising history and science of plant intelligence (J. Benham, Tran.; 1st ed.). Island Press.

Mancuso, S. (2018). The revolutionary genius of plants: a new understanding of plant intelligence and behaviour. Simon and Schuster, New York

Marder M. (2013). Plant-Thinking: A Philosophy of Vegetal Life. Columbia University Press.

Marder, M. (2017). To hear plants speak. In M. Gagliano, J. C. Ryan, & P. Viveira (Eds.), The language of plants: Science, philosophy, literature (pp. 103–125). University of Minnesota Press.

Martin, G. J. (2004). Ethnobotany: A Methods Manual. Taylor & Francis Group.

McGregor, H. E., Madden, B., Higgins, M., & Ostertag, J. (2018). Braiding Designs for Decolonizing Research Methodologies: Theory, Practice, Ethics. Reconceptualizing Educational Research Methodology, 9(2), p.1-21. https://doi.org/10.7577/rerm.2781

Miller, T.L. (2019). Plant Kin: A Multispecies Ethnography in Indigenous Brazil. University of Texas Press.

Myers, N. (2017). From the Anthropocene to the Planthroposcene: Designing gardens for plant/people involution. History and Anthropology, 28(3), 297-301. https://doi.org/10.1080/02757206.2017.1289934

Nazarea, V. D. (1999). A View from a Point: Ethnoecology as Situated Knowledge. In Nazarea, V. D. (ed). Ethnoecology: Situated Knowledge/Located Lives, University of Arizona Press. (pp. 41-47). https://doi.org/10.2307/j.ctv1gwqrkg.5

Nolan, J.M. and Turner, N.J. (2011). Ethnobotany: The Study of People–Plant Relationships. In Anderson E. N., Pearsall D., Hunn E., Turner N. (eds) Ethnobiology. https://doi.org/10.1002/9781118015872.ch9

Nunn, P. (2019). The Edge of Memory: Ancient Stories, Oral Tradition and the Post-Glacial World. Bloomsbury Sigma. https://doi.org/10.5040/9781472943255

Ogden, L. A., Hall, B., & Tanita, K. (2013). Animals, plants, people, and things: a review of multispecies ethnography. Environment and Society, 4(1), 5. https://doi.org/10.3167/ares.2013.040102

Ogilvie, M. B. (2004). The Biographical Dictionary of Women in Science. Routledge. https://doi.org/10.4324/9780203801451-1262

Osgood, J. (2022). From Multispecies Tangles and Anthropocene Muddles: What can Lichen Teach Us about Precarity and Indeterminacy in Early Childhood? In Blyth, C., Aslanian, T.K. (eds) Children and the Power of Stories. Children: Global Posthumanist Perspectives and Materialist Theories. Springer, Singapore. https://doi.org/10.1007/978-981-16-9287-1_5

Osgood, J., Axelsson, S., Cavaliero, T., Hanniffy, M., & McDonnell, S. (2023). Arboreal methodologies: Getting lost to explore the potential of the non-innocence of nature. Occasional Paper Series, 50. https://doi.org/10.58295/2375-3668.1499.

Parmar, S., Malone, K., Young, T., (2024). Planty Childhoods: Theorising with a Vegetal Ontology in Environmental Education Research, Australian Journal of Environmental Education, 40(2), 243-257. https://doi/10.1017/aee.2024.29

Pascoe, B. (2018). Dark Emu: Aboriginal Australia and the Birth of Agriculture. Magabala Books.

Prance, G. T. (2007). Ethnobotany, the science of survival: a declaration from Kaua'i. Economic Botany, 61(1), 1-2. https://doi.org/10.1007/BF02862367

Phillips, O. L. (1996). Some quantitative methods for analyzing ethnobotanical knowledge. Advances in economic botany, 10, 171-197.

Chakravarthi, R. P. (2007). Indian philosophy and the consequences of knowledge themes in ethics, metaphysics and soteriology. Routledge.

Rautio, P., and Vladimirova, A. (2017). Befriending Snow: On data as significant research companion, in Koro-Ljunberg, M., Löytonen and Tesar, M. Disrupting Data in Qualitative Inquiry, Peter Lang. p.23-33.

Reed, A. (2021). Flowerlands: The written word as world maker. TEXT, 25 (Special 62). https://doi.org/10.52086/001c.29648

Rigby, K. (2020). Reclaiming Romanticism: Towards an Ecopoetics of Decolonization. London,: Bloomsbury Academic. Retrieved July 23, 2025, from http://dx.doi.org/10.5040/9781474290623

Rose, D. B. (2004). Reports from a Wild Country: Ethics for Decolonization, Sydney, University of NSW Press.

Rose, D. B. (2013). Val Plumwood's Philosophical Animism: attentive interactions in the sentient world. Environmental humanities, 3(1), 93-109. https://doi.org/10.1215/22011919-3611248

Robben, A., & Sluka, J. (2015). Ethnography. International Encyclopedia of the Social & Behavioral Sciences. https://doi.org/10.1016/B978-0-08-097086-8.12065-3

Ryan, J. (2015). Posthuman Plants: Rethinking the Vegetal Through Culture, Art, and Poetry. Common Ground Publishing. https://doi.org/10.18848/978-1-61229-823-8/CGP

Salmon, E. (2000). Kincentric Ecology: Indigenous Perceptions of the Human-Nature Relationship. Ecological Applications, 10(5), 1327–1332. https://doi.org/10.1890/1051-0761(2000)010[1327:KEIPOT]2.0.CO;2

Schiebinger, L. (2007). Plants and Empire: Colonial Bioprospecting in the Atlantic World. Harvard University Press. https://doi.org/10.4159/9780674043275

Schiebinger, L., & Swan, C. (2007). Colonial botany: science, commerce, and politics in the early modern world. University of Pennsylvania Press.

Scott, J. C. (2017). Against the grain: A deep history of the earliest states. Yale University Press. https://doi.org/10.2307/j.ctv1bvnfk9

Sheldrake, M. (2020a). Entangled life. Bodley Head.

Sheldrake, M. (2020b). The ‘enigma’ of Richard Schultes, Amazonian hallucinogenic plants, and the limits of ethnobotany. Social Studies of Science, 50(3), 345–376. https://doi.org/10.1177/0306312720920362

Shiva, V. (1989). Staying Alive: Women, Ecology and Development. Zed Books.

Simard, S. (2021). Finding the mother tree. Penguin Random House, UK.

Smith, L. T. (2021). Decolonizing Methodologies: Research and Indigenous Peoples (3 ed.). Zed Books.

Smith, M. (2013). Ecological Community, the Sense of the World, and Senseless Extinction. Environmental humanities, 2(1), 21-41. https://doi.otg/10.1215/22011919-361033

Sponsel, L. E. (1992). Biological Anthropology -- Ethnobiology: Implications and Applications. Proceedings of the First International Congress of Ethnobiology (Belem 1988) (Volumes I and II). Posey, D., Overal, W. et al., (eds). American Anthropologist, 94(2), 499. https://www.proquest.com/scholarly-journals/biological-anthropology-ethnobiology-implications/docview/198123348/se-2

St Pierre, B A (2008). Afterword: Decentering voice in qualitative inquiry, in Alecia Y. Jackson, and Lisa A. Mazzei, (eds) Voice in Qualitative Inquiry: Challenging Conventional, Interpretive, and Critical Conceptions in Qualitative Research, Taylor & Francis Group.

St. Pierre, E. (2014). A brief and personal history of post qualitative research toward "post inquiry." Journal of Curriculum Theorizing, 30(2), 2–19. https://doi.org/10.63997/jct.v30i2.521

St. Pierre, E. A. (2018). Writing post qualitative inquiry. Qualitative Inquiry, 24(9), 603–608. https://doi.org/10.1177/1077800417734567

St. Pierre, E. A. (2024). A primer for post qualitative inquiry. Qualitative Research in Psychology. https://doi.org/10.1080/14780887.2024.2347579

Stewart, G. T. (2021). Defending science from what? Educational Philosophy and Theory, 1. https://doi.org/10.1080/00131857.2021.1966415

Subramaniam, B. (2024). Botany of Empire: Plant worlds and scientific legacies of colonialism. University of Washington Press. https://doi.org/10.1515/9780295752471

Thambinathan, V., & Kinsella, E. A. (2021). Decolonizing Methodologies in Qualitative Research: Creating Spaces for Transformative Praxis. International Journal of Qualitative Methods, 20. https://doi.org/10.1177/16094069211014766 (Original work published 2021)

Thompson, A. (2018). Taking Stock of Life, Scientific American, 319 (2), 16 (August)

Tsing, A. L. (2015). The mushroom at the end of the world: on the possibility of life in capitalist ruins: Princeton: Princeton University Press.

Tutt, C. (2021). The First Scientists: Deadly Inventions and Innovations from Australia's First Peoples. Hardie Grant Explore.

United States Department of Agriculture, (2023). Ethnobotany. Retrieved May16, 2023, https://www.fs.usda.gov/wildflowers/ethnobotany/index.shtml

Wild, A., Reed, A., Barr, B., & Crocetti, G. (2020). The Forest in the Tree: How Fungi Shape the Earth. CSIRO Publishing.

Wohlleben, P. (2016). The Hidden Life of Trees: What They Feel, How They Communicate - Discoveries from a Secret World, Black Inc.

Young, T., Crinall, S., & Malone, K. (2022). Disruptions of post-qualitative education research: Tensions and openings. Qualitative Inquiry, 28(3-4), 312-321. https://doi.org/10.1177/10778004211