

An octo-aesthetic figuration for learning in times of crisis

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Abstract

This theoretical paper mobilises a multi-modal figuration – octo-aesthetics – to argue for a transversal approach to HE (higher education) pedagogies appropriate to times of uncertainty. Using the eight independently thinking arms of the octopus as a guide, I deploy eight interrelated conceptual thinking aids to outline the relevance of an ethico-aesthetic paradigm to HE in times of individual, social, and environmental crisis. Deployed as speculative thinking aids, these octo-aesthetic figurations – schizoanalysis, bewilderment, shimmer, ecosophy, ecologicity, holobiont, trans-corporeality, and geontology – reclaim ‘vision’ and ‘objectivity’ from the disembodied all-knowing gaze of ‘Man’ and queer the central, and often unquestioned positions of privilege accorded to this viewpoint in humanist education systems. Calling into question anthropocentric binary/separatist humanist logics and assumptions of objective mastery, octo-aesthetic figurations reveal the onto-ethical outlines of a transversally situated learning modality that defies objectifying majoritarian modes of thinking/learning that are no longer appropriate to pedagogies in times of ecological calamity.

Keywords: bewilderment, ecologicity, ecosophy, geontology, holobiont, octopus aesthetics
Schizoanalysis, shimmer, trans-corporeality

Introduction: Learning the uncanny

Our ‘primate sense of colour’ and ‘stereoscopic vision’ determine the ways in which we think and teach about the world, situating our pedagogical endeavours in a particular visual/aesthetic frame of reference (Haraway, 1988: 582). Techno-scientific instruments and progress-driven ideological regimes both ‘enhance’ and ‘cannibalise’ this perspectival situatedness, promoting the so-called ‘objective’ perspective of scientific positivism and Cartesian reason (1988: 581). As educators we often mobilise these dominant/majoritarian perspectives automatically, designing learning methodologies that pose either/or questions about the world ‘in such a way that the material conditions of asking make the answers a foregone conclusion’ (Snaza, 2020: 263). Extractive capitalism’s necrotic powers and logics, working in tandem with ‘neoliberalised educational banking models’, have elevated the Cartesian ‘human subject—problematically



limited to “Mankind”—as the world’s “lord and master” (Geerts & Groen, 2022: 189). In the Anthropocene, the mastery of Man – underpinned by a perspective from nowhere – a ‘god trick’ of transcendent and objective reason – has gone rogue, manifesting uncontrolled planetary devastation. Drawing on Haraway’s notion of ‘feminist objectivity’, formulated in terms of ‘limited location and situated knowledge’ (1988: 583), this paper mobilises a series of overlapping concepts from feminist (new) materialism, anti-majoritarian/minoritarian philosophy and queer theory to enact an octo-aesthetic figuration for learning in times of ruination and crisis. Situated perspectives, which eschew binary either/or logics in favour of multi-modal both/and perspectives, are relational, on-going, embedded, embodied, extended and *sympoietic*, celebrating a radiance of proximity with multiple others.

Octopus encounters while swimming in the kelp-forests of the Cape Peninsula orientate this speculative foray, suggesting eight speculative vignettes, like the eight independently questing arms of the octopus. My own experiences while swimming – exercises in coordinating my visual and other embodied responses with the mutable weather, waves, currents, chemo-tactile gradients of water, as well as the dynamic presences of watery beings – suggest complex, dynamic, responsive, and situated worlding practices grounded in ‘webbed connections’ and differently embodied ‘ways of seeing’ (Haraway 1988: 585). Swimming suggests a methodology for learning and teaching that is both situated and embodied in fluidity, challenging the projective, hierarchical, rigid, and referential constraints of humanistic pedagogical modalities. Like swimming, learning involves ‘the discovery of problems’, the introduction of ‘problematic fields’ and the formation of bonds of creative ‘complicity’ between ‘nature and mind’ as well as between our own partial perspectives and ‘the as-yet-unknown’ via processes of ‘projection and conjecture’ (Ramey, 2013: 179). As with learning, swimming is experiential and affective, requiring an openness to encounters, perceptual adjustments, embodied precepts, and the seamless modulation of non-cognitive responses. Learning has deep evolutionary roots too; ancestries that are entangled with the oceanic. Evolutionary biologist Lynn Margulis reminds us that mind and learning have watery origins, arising in proprioception, ‘the perception’ and ‘spatial orientation arising from stimuli’, grounded in ‘self-monitoring nerves’ that tentatively learnt the arts of swimming and anchorage in pre-Ediacaran oceans nearly 700 million years ago (1998: 114). What we humans refer to as ‘advanced episodic memory’, the very ground of learning itself, has deep watery pedigrees too; it evolved along with ‘nervous systems and brains, and the appearance of complex swimming bodies’ in the Cambrian seas (Godfrey-Smith, 2018: 200). While standard anthropocentric origin stories tend to demarcate differences and ontological boundaries, conceal material agencies, and curb possibilities of becoming, alternate visions of co-evolutionary embodiment, perception and proprioception grounded in the oceanic propel us toward more polymorphous fluid transmissions, overlaps and intersections.

As an avatar of oceanic origins, the transversally minded/embodied octopus urges us toward new lines of flight that accentuate the watery permeability of our being, emphasising the incontrovertible fact that we, like other forms of life, are ‘perpetually interconnected with the flows of substances and the agencies of environments’ (Alaimo, 2016: 112). There is an urgent

need today to think beyond the discursive regimes and ontological separation stories of Cartesian reason that have turned the human into a pivotal node in networks of harm (extraction, pollution, etc.) that are premised on a 'convenient ideology of solidly bounded, individual consumers and benign, discrete products' (2016: 112). Octo-aesthetics suggests a modality of thinking/learning/doing otherwise that rejects rigid dividing lines, figuring the protean oceanic octopus as a relational avatar of new modes of ecological noticing; an avatar that functions as an aesthetic 'refrain' that 'draws out something new' in order to gestate 'the thought of the future' (Deleuze, 1994: 9). It invokes the principle of a repetition which is no longer that of the same (the same as the humanized/individualized/discreet human), suggesting possibilities for mobilizing more fluent ecologically aesthetic learning processes that are 'mobile, protean, infused, volatile, tricky and strange' (Roberts, 2020: BoM 1).

The perceptual worlding of the octopus suggests an uncanny modality for learning. Information gathered by u-shaped pupils, chemo-tactile suckers on independently thinking arms, and iridophore and leucophore cells distributed throughout a seeing-skin overlap to produce octopus thought as an extended environmental perceptual affordance (Mather, 2019). In *Difference and Repetition* (1994) Gilles Deleuze's reminds us that there is an a haptic, affective, and resonant dimension to what the human senses perceive too; a kind of perceptual/affective spiritual ordeal that takes place when mind and sensory nervous system coalesce. Thought and learning are enacted not in terms of pure logic or reason, but rather as perceptual/affective/aesthetic rites of passage between world and self/self and world (1994). Learning, whether human, octopus or otherwise, remains grounded in aesthetics, involving as it does data gathered from the environment by the senses – by sight, smell, sound, proprioception, and immersive touch. In bodies, human or not, these are not subject to idealized processes of reasoned logic or dogma, but transmuted into affectations, interpretations, and intensities in what we term mind. There is no discreet or detached Cartesian *cogito ergo sum*; the mind that is stimulated into thought and learning is by its very nature, distributed, flowing and embodied. Immaterial and material forces commingle in the sensory/perceptual realm of the aesthetic; extended and transformed, gestated by non-cognitive processes, entangled in environmental places and relations with other sensing beings, caught up in a flow of events, becomings, and haecceities. Octo-aesthetics demands not only that we become answerable for how and what we teach about the world, but that we extend the possibilities of seeing/perceiving otherwise by exploring, in our classrooms and research practices, different situated perspectives that are curious and creative, 'committed to partial healing, modest rehabilitations, and still possible resurgence in the hard times of the Anthropocene' (Haraway, 2017: M33). Such a process begins by asking what cognitive/perceptual dissonance is driving our current state of aesthetic impoverishment and ecological disjunction.

Schizoanalysis

In the Anthropocene, the apocalyptic world-destroying telos of Integrated World Capitalism (IWC) has been 'delocalised and deterritorialised to such an extent' that it has become

'impossible' for us 'to locate the source of its power' or the full scope of its harms (Guattari, 2000: 6). Schizoanalysis, broadly speaking, challenges long-standing reductionist paradigms that see learning and thought as something that involves only certain individualised human(ised) brains and bodies. It describes the revolutionary onto-ethico-epistemological transversal praxis emergent from the combined and separate oeuvres of Gilles Deleuze and Félix Guattari. Their eclectic schizoid mix of minoritarian spiritual materialist philosophy, psychoanalysis and political activism is geared at transforming the desultory affects and 'sad passions' (paranoia, depression, anxiety, apathy, etc.) resulting from capitalist realism into 'the potential bearers of new constellations of universes of values or reference' while seeking out transversal ways of re-learning/re-thinking grounded in sensorial, affective and ecologically-aesthetic domains of possibility (Guattari, 1995: 18).

There is perhaps no better term than 'schizoanalysis' to describe the processional sensualism of the multimodal octopus's situated perspective as it parses its continually shifting environment, grafting together the actions of several autonomously sensing/cognating limbs into coordinated and continuously adaptable thinking-movements. Distributing more than half of its neurons throughout eight independently thinking arms and an independently sensing skin, the multimodal octopus learns its environment in a schizoanalytic manner that seems at odds for us bipedal humans with our progressive binary evolutionary dogmas, limited proprioception, and our focus on a centralized brain as the locus of logical and reasoned behaviours (Godfrey-Smith, 2018). Science-fiction writer and trained zoologist Adrian Tchaikovsky, who provides an outstanding fictional account of what it might be like to be an octopus in *Children of Ruin*, has the following to say about the multitiered octopus perspective:

Their territories are intellectual, physical, emotional ... their being is passionate and mercurial ... Their Crowns [heads] trumpet their emotion [across their bodies]. Their Reaches – eight separate calculating engines [or arms] running in networked parallel – express pure maths and logistics [by way of individually acting and precision deployed chemo-sensitive suction cups]. Their arms are a perfectly evolved engine of rational expression serving the tumultuous emotive whims of their Crowns. ... The affective intelligence of their Guise [a separately thinking and seeing skin] displays their moods, thoughts as well as the shifting atmospheres of their environment. (2019: 370)

As Tchaikovsky (2019) aptly illustrates by drawing on research in cognitive biology, despite their differences from us there is much we humans – if we are paying attention, that is – might recognize in a being we last shared a common ancestor with well over 500 million years ago. The thinking/feeling multi-perspectival movements of the octopus segues with Deleuze and Guattari's schizoanalytical program for activating the aesthetic imagination as a counterforce of desiring vitality. Unlike the singular, bipedal, forward-facing, either/or reasoned focus of Cartesian humanism, 'rigid certainty is anathema to the octopus' and 'dogmatism would be truly alien to them' (2019: 370). As educators, there is much to be gained by considering the transversal

both/and behavioural, cognitive, and proprioceptive flexibility of the octopus, for whom the central brain, independently thinking arms and seeing/sensing skin are equal partners in how it learns and processes its environment (Mather, 2019). As the avatar of an octo-aesthetic figuration for learning the octopus embodies the necessity of canvassing across divergent perspectives and terrains of knowledge production for new meanings and constellations of affect. Such transversal/multidisciplinary/multi-perspective conversations might help to propel ourselves and our students away from the 'schizophrenic double pull' of the humanist/capitalist project and the capitalist 're-territorialization of desires for the purpose of commercial profit' (Braidotti, 2006: 3).

Shizoanalysis pays attention to modalities outside of 'objective' reason, taking on board insights from so-called 'primitive' modelling systems such as animism that have long deployed schizoanalytic techniques of metamodelization. Trance-inducing dance, the donning of animal/spirit masks and the use of psychedelic substances are just some of the ways in which animist societies have deployed pedagogical schizoanalytic healing rituals that situate thought as an embodied and aesthetic rite of passage centred on 'the dynamics of participation in the enduring and the ephemeral, birth, life and death' (Rose, 2022: 141). Grafting together a multitude of human, nonhuman and cosmic perspectives, animist navigational systems such as shamanism enact schizoanalytical thinking-becoming-movements that, as the anthropologist Jeremy Narby (1998) explains, are used to guide learners/neophytes around difficult concepts as well as differently embodied forms of perception, making it possible for individuals and communities to think beyond the perspectival limits of human thought and culture. A similar counter-desiring movement is taking place in the hermetic or spiritual materialism of minoritarian theorists like Deleuze and Guattari for whom the ritual/aesthetic modes of animism act as more than mere simulations of experience but rather as powerful access points to the processes of more-than-human world-making or assemblage formation. For a human 'to become animal', as Deleuze explains to Claire Parnet by alluding to anthropological literature on psychedelic shamanism, 'the animal in turn [must] become sound, colour and line' (Deleuze & Parnet, 1987: 72). Becoming-animal, conceived of schizoanalytically, stimulates other material/immaterial zones of exchange – from the human to the animal, the animal to the human, to the formation of an unfixed, unstable, constantly adapting exploratory body, teeming with 'forces, essences, substances, elements [and] remissions' (Deleuze & Guattari, 1987: 159). Schizoanalytical becoming is the process of gestating multi-perspectival event sites that induce ruptures in habituated notions of subjectivity. Learning to swim, becoming-octopus and schizoanalysis are analogous in this regard. For the octopus, there is no aesthetic/perspectival sense of state of separation from its environment. It learns as it moves through the fluid medium of the water, its subjectivity 'is distributed in the touching ... becoming the shape and texture of the thing being touched', its body/mind are 'shaped in motion and by touch' (Roberts, 2020: BoM 1).

Schizoanalysis suggests a mode of learning that takes place via encounters at 'intersections' where 'disparate processes and forces at many different levels of complexity and organisation among bodies and minds' converge (Ramey, 2013: 178). Such a project counters the desiring

logics of the IWC by catalysing and coordinating 'a hitherto unimagined number of possibilities of thinking, feeling and acting' otherwise, producing interruptions, intensities, and synergies between ostensibly disparate domains (Pederson, 2019: 154). Pedagogically, schizoanalysis is about producing, both in the classroom and in our research, 'not only shocks to thought', but also 'shocks to our very existence in terms of our present ways of being human' (2019: 154). Redirecting education away from the central premise of the humanist/capitalist project, the schizoanalytical project wholly rejects the premise that only humanised humans are sufficiently capable of reasoned thought.

Bewilderment

Queer, decolonial educational scholar Nathan Snaza (2019: 78) draws our attention to the pedagogical importance of bewilderment; a process of disorientation whereby the 'disciplined attentive apparatus' – that of the schooled and encultured mind – is exposed to 'a messy, unknowable set of relations' animacies 'that are always swirling around' us, affecting us, even though we don't consciously register them'. Pedagogies of bewilderment emphasise how other-than-human perspectives and agencies impact the ways we think, parse, or make sense of the world. 'Bewilderment' refers to a schizoanalytical eco-aesthetic pedagogical re-orientation whereby 'the self' is pedagogically revealed as 'always becoming in processual relation to myriad entanglements with non-human forces and agencies' (2019: 81). Learning and teaching processes need to ground the self as emergent 'in and from a world in flux that always exceeds control' (2019: 81).

Times of crisis are defamiliarizing, necessitating that we bring our pedagogies up to speed by learning the uncanny so that we are better equipped for survival. The octopus is an avatar of survival in flux. Adept at persisting in a changeable environment, its transversal perspective reflects its knack for navigating complex, inscrutable conditions. The oceanic environment is never constant, as any wild swimmer knows through hard experience. Currents, atmospheres, and temperature/chemical gradients are continuously shifting. Visibility is never constant. The water might be crystal clear or unexpectedly cloudy and murky. Sudden algal blooms – worsened by frequent sewage spills – might deprive water of critical oxygen, proving fatal to any lingering fish, arthropod or mollusc. Predators, like the octopus, or even the shark, might suddenly themselves become prey. Food, seasonally abundant, might swiftly become scarce. Any chance encounter with an octopus reveals a glimpse of how adeptly the mutable octopus negotiates its changeable world. The perceptual world of the octopus does not involve the perception of colour as we know it, 'but rather the plane of polarisation of light' and 'sensitivity to chemical and mechanical cues we are not able to perceive' (Mather, 2019). Upon encountering it in the kelp forests, it will turn its slitted eyes to follow you, unfurling its curious suckered arms to taste your hormonal signature in the water, shifting its colour, form and texture to signal its responsiveness (curious, fearful, alert, playful, etc.). All the while, it will be monitoring its larger environment, shifting its being, in turn, to reflect changing polarisation-levels, tidal pressures and the chemical, haptic or visual signals of prey or approaching danger. The experiential, affective, and uncanny

nature of such an encounter with a vigilant, communicative, and fluid being stimulates an intensity, a bewildering line of flight, a tentative becoming-octopus encounter. What could such a mind/body feel like? What would an octopus perspective entail? What could such a disorientating imaginative/speculative exchange tell us about the distributed nature of our own embodied mind and our learning processes?

Humanist educational paradigms, caught up in the fiction of mastery, tend to not pay much heed to the 'affective participation of non-humans and their animacies' in the situatedness of human beings, 'even as our corporeal orientation in the world is modulated in and by this more-than-human situation' (Snaza, 2020: 124). As an animist learning modality, bewilderment takes us 'away from the stable, predictable, and cultured world of civilization' toward new aesthetic, political, ethical, epistemological, ontological, and pedagogical 'narratives emerging from seemingly uninhabitable terrains' (Snaza, 2013: 49). Where the human is no longer an objective for education but a point of departure, when 'different kinds of entities' are brought into productive conversation in classrooms and in research practices to help 'reveal the web of animacies' that make living possible, an eco-aesthetic paradigm comes into focus (2020: 124). Bewilderment is about 'jettisoning the humanist pursuit of full humanity' in education and, in the process, undertaking 'a commitment' to the full consideration of diverse others; a deliberation 'that will allow us to move away from the reduction of politics and education to humans by realizing our real relations to other beings in the world, relations that humanism has taught us to disavow' (Snaza, 2013: 51).

Shimmer

As Guattari (2002) observes, we are aesthetically driven away from noticing relations, or even of recognising others, by 'the routines of daily life, and the banality of the world represented to us by the media, surrounding us with a reassuring atmosphere in which nothing is any longer of real consequence'. Numbed in this way,

we cover our eyes, we forbid ourselves to think about the turbulent passage of our times, which swiftly thrusts far behind us our familiar past, which effaces ways of being and living that are still fresh in our minds, and which slaps our future onto an opaque horizon, heavy with thick clouds and miasmas' (2002).

The way out of this petrifying apocalyptic numbness lies in cultivating the aesthetic capacity to see the bewildering becoming brilliance of nature in all its flux and unpredictability – a nature full of powers, desires, allures, rewards, and dangers; a beautiful shimmering that demands our notice, but which humanizing/westernised modes of noticing have objectified into paralysis.

The Aboriginal Yol'gnu term *biryun* – shimmer – is deployed by Deborah Bird Rose, an Australian-based ethnographer of Aboriginal peoples (2022), to describe the capacity to see, experience and recognise the worthiness of the Other, to behold nature's passionate energy. Shimmer describes the aesthetic 'captures of nature' and their 'capacity to elicit affect', something

that wild-swimming encounters bring into clear focus, revealing 'water capturing and reflecting the light', the 'shark flashing its look', the octopus unfurling its curious arms or taking on the texture and colours of the kelp, 'the glittery shine' of it all (Rose, 2022: 142-143). Embracing this allure, the capacity to see, experience and participate in nature's ancestral power, brings not only joy, but also experiential knowledge to the beholder (Rose, 2022). Amerindian anthropologist and Deleuzian scholar Eduardo Viveiros de Castro's notion of relational perspectivism, analogous to Rose's shimmer, describes how the dynamic pedagogical becoming-animal ritual exchanges of animist societies allows animals, plants, and environments persuasive points of view. 'Nothing happens', as de Castro (2016: 290) writes, when a human enters into a speculative or ritual becoming relation with an animal such as an octopus (or any other being, object or spirit), save that 'everything changes': there is 'no motion' as such, save that 'position and condition' have completely altered, giving way to relations, 'and relations are not representations, they are perspectives'. The bi-directional nature of becoming invites us to consider that the octopus, like all other lifeforms, or the ocean, like all other environments, are relations with perspectives that are worth considering. It invites us to think through multi-modal perspectives for transforming, defamiliarizing and recognizing our being as permeable and co-extensive with the being of others.

As the South African philosopher Chantelle Gray van Heerden (2019: 240) reminds us, 'in Western epistemology, the Other is an object – a thing – whereas indigenous [animist] praxis aims to personify so that the Other is always worth knowing'. Shimmer describes the capacity to not only recognise the inherent value of the other, but to cherish the other's participation in the endless oceanic becoming flow or motion of life; a wave that stretches from the inorganic to the organic, the past into the future. Shimmer describes the glimmer of the multispecies/multi-scalar transversal 'flame of life' in which all the world partakes, a desiring wave stretching into endless cycles of becomings and un-becomings, landscapes, bedrocks, oceans, lifeforms, and atmospheres, back into ancestral other-than-human times and forward into descendant more-than-human futures (Rose, 2022: 131). Educators are called upon to cultivate the ability to notice this shimmering, to call attention to the innate, embodied, and perceptual recognition and love (what some biologists have termed *biophilia*) that all living beings possess for life's gifts, pleasures, and possibilities. Yet, instead of doing this necessary work, as Rose (2022) writes, we all too often find ourselves indifferent to it, even while the world is being trashed around us. Octo-aesthetics mobilises shimmer to trouble this apathy, stupefaction, and misrecognition. It takes on board shimmer as an essential facet of the pedagogical work of harnessing aesthetics to a multi-modal project of reciprocal noticing and more-than-human care; a project of reclaiming something other than cruelty, exceptionalism, and othering as the mode by which the human has come to be defined.

Ecosophy

'By what means, in the current climate of passivity', could we learn to notice shimmer, and thereby 'unleash a mass awakening, a new renaissance?' asks Guattari (2002). For Guattari, mass-media

and humanising educational systems are 'deterritorialized factories' of IWC that mass-produce homogenous subjectivities that atrophy individual and collective ways of noticing ecological relations (2002). By shrivelling our aesthetic sense, by scrubbing out existential mutations and diversities that are unlike Reason itself, humanising education systems thoroughly compromise our chances of survival. We need to urgently challenge and change the modes whereby we perceive and produce the human, because 'without modifications to the social and material environment' in which social reproduction and education takes place 'there can be no change in [destructive and stupefied] mentalities' (2002). Ecosophy constitutes attempts – political, literary, artistic, and pedagogical – to realise and put into practice an ethico-aesthetic paradigm that underscores the irrefutable interconnections between the three ecological registers identified by Guattari (2000), namely, the self, society, and the more-than-human environment. Ecology is not the sole provenance of nature-lovers or qualified specialists. Instead, ecology is what we are immersed in, an aesthetic and ethical relational perceptual embodiment that should make us 'question the whole of [humanist] subjectivity and of capitalistic power formations' (2000: 52). Ecosophy breaks with ideas of humanistic progress and techno-scientific mastery. Progress stories not only conspire against our ability to notice the more-than-human relations that make continued survival possible, but delude us into thinking that environmental, social, and individual problems are disconnected. Anthropogenic climate-change, widespread zoonotic diseases resulting from anthropogenic ecosystem disturbances, ocean acidification, and cascading biodiversity crises are just some of the events that underscore the 'limits of humanity's techno-scientific power' and highlight the urgency of seeking out alternative ecosophical perspectives (Guattari, 2000: 42).

Guattari reminds us that education needs, at all costs, to eradicate the homogenising 'fatalistic passivity' brought on by smug humanistic self-assurances in order to 'apprehend the world through the interchangeable lenses or points of view of the three ecologies', which expand beyond the human to include the entire world (2000: 42). Ecosophy describes a different, ecologically-aesthetic manner of cultivating fluid notions of subjectivity – not along separatist anthropocentric lines of normative humanising educational projects, but along lines of distributed subjectivity that span more-than-human individual, social and environmental ecologies. It names the educational project of redirecting our inter-passivity and mass-mediated stupefaction toward relational sense/perceptions of subjectivity as inter-woven, distributed and always more-than-human; a process that begins with an acknowledgement of the fundamental interconnectedness of the human and the more-than-human world. The ultimate ecosophic goal for Guattari is to achieve what he calls 'heterogenesis' – the pedagogical cultivation of more fluid subjects that are able to 'ward off the entropic rise' of anthropocentric hubris and the alarming passivity engendered by the IWC (2000: 68).

Ecologicity

Amanda Boetzkes, a Canadian theorist of contemporary art and aesthetics, suggests that ethico-aesthetic projects remain crucial at a time when new immersive technologies have 'altered the

terms and parameters of perception', redefining 'the limits of vision' and calling on us to consolidate and enact new forms of visuality, mobilised around new forms of 'ecologicity' or 'environmental recognition' (2015: 272). While new technologies may stupefy us and cannibalise our desires, they also have the potential to expand our environmental affordances. In an age of global communication and new vision machines, as Margulis writes in *Symbiotic Planet*, 'I like to think that we people augment and continue to accelerate' the biosphere's 'proprioceptive capability' (1998: 114). Humanistic fantasies of techno-scientific mastery, however, have severely eroded this potential, deceiving us into thinking that we might possess knowledge and even aesthetic appreciation at one remove, without relationality or consequence. Only once we have detoxified ourselves from our anthropocentric progress-stories, only once we have recognised that 'Gaia, the physiologically regulated Earth, enjoyed proprioceptive global communication long before people evolved' (1998: 114), can technology be harnessed to an ecosophic project that reveals and sustains the shimmering flame of life. Where technologies can be used to enhance embodied and sensory contact zones between different kinds of agency (whether human, animal, meteorological, geological, or even algorithmic), ecologicity as a mode of schizoanalytical grafting comes into focus.

One potent example where technology is used to uncover and augment embodied and sensory contact zones between different animacies is the audio-visual work of the British/South-African artist Mer Maggie Roberts. Robert's series of eight *Becoming Octopus Meditations* (BoM, 2020), for example, uses filmed wild-swimming encounters with octopuses in the kelp forests of the Cape Peninsula, schizoanalytically interpreted via digital imaging software and 3D animation techniques, to generate an ecologicity; a perceptual field of intersecting and synaesthetic technologically-mediated perceptual data (touch, smell, vision, hearing, taste, etc.). Staging sensory dialogues between human and octopus, Roberts uses technology to perform a conversation between radically different perspectives. Speculatively visualising the octopus from the inside of its sensory perceptual field, BoM attempts to generate ecologicity as a kind of dynamic resonance; a zone of transference that might serve as the model for new types of ecological noticing and learning in which the 'sensible is not perceived, known, or represented', but rather 'ambivalent, fluid and intimate, understood as tactile, haptic, folded and distributed' (Roberts, 2020: BoM 2).

By imaginatively diffracting human visuality and perspective with the bewildering perceptual world of another kind of being, pedagogical encounters such as those staged in BoM generate an ecologicity; a bewildering ontological, ethical, epistemological, and political learning situation that mobilises machine vision to not only veer away from mass media stupefaction, but also to derail the anthropocentric god-trick of critically detached and invulnerable visuality. Indeed, 'the retinal trembling induced by BoM's array of machine-mediated optical tricks' reveal visual apparatuses', whether human or octopoid, to be 'sensitive synaesthetic organs, capable of being stretched, agitated, or even damaged', thus 'restoring vision to its more-than-human material nexus' in shared material vulnerabilities (Carstens, 2022: 117). Digital animation and other technologically mediated techniques – when used well – can help to potentise such

perspectival shifts and overlaps, enabling 'new codes of recognition' to emerge (Boetzkes, 2015: 279).

Holobiont

Where diverse 21st century sciences – from biology to anthropology – have harnessed new technological platforms to the task of developing new forms of ecological recognition and relation, they have begun to transform into a schizoanalytical project of metamodelization that enacts treasons against anthropocentrically conceived-of nature. Recognising the radical potential of these developments in their nascent phases, Deleuze and Guattari (1987) found themselves drawn to the manner by which hybrid assemblages in nature can be observed tapping into, accessing and traversing what they term the machinic phylum (the organizing potentials available to nature's abiotic and biotic systems – from weather systems to crystalising minerals, organic lifeforms or emerging algorithmic/artificial intelligence networks). Evolution, as they observe, is symbiogenetic (co-evolving) and heterogenous; nature is an 'interkingdom' bricolage of 'unnatural participations' that privileges interspecies interactions and transversal encounters across boundaries and thresholds (1987: 242).

Where contemporary life-sciences and the arts, augmented by new ecologicist technological affordances, have honed-in on the co-evolutionary becomings and relations that Anthropocene humans are dislocating, they have become a (r)evolutionary schizoanalytical cartography of 'interactions ... interpenetrations [and] co-dependent originations' (Gilbert, 2020: 76). In exciting corners of the life-sciences and arts, 'interspecies entanglements that once seemed the stuff of fables', have now become 'materials for serious discussion' (Tsing, 2015: vii). One compelling example of this is Margulis's ethico-aesthetic figuration of the holobiont. Building on her once-radical theory of symbiogenesis (co-evolution) as well her work with James Lovelock on the co-evolutionary *Gaia* hypothesis, Margulis' went on to figure the animal (including the human animal) as *holobiont* – basically 'an ecosystem with legs' (Yong, 2016: 152). Like the octopus, the animal visualised as an ecosystem or holobiont is a continually becoming assemblage made up of entangled yet independently functioning parts; an ecological bricolage of commensal, symbiotic, and pathogenic organisms (or bionts) nested within one another. Each holobiont, in turn, is embroiled in diverse interspecies exchanges with other holobiont assemblages in perpetual proprioceptive ecosystem exchanges and flows (Haraway, 2017). All complex lifeforms, from protists to cephalopods and humans, are increasingly thought of in this way; as interpenetrated and entangled bodies tumbled into bodies, embroiled in continuous co-evolutionary processes of world-making and world-sustaining with diverse others (Haraway, 2017). In coming to terms with such a dizzying figuration of symbiotic entanglement, contemporary life-sciences are beginning to undo the hard reductionism of humanist classificatory schemes as well as the rigid divisions between disciplines of knowledge and factional professions (Quammen, 2018).

Animals, conceptualised as holobionts, are not discreet individuals, or even individual species, but entire worlds. In their innate relational capacity for forming entangled assemblages

with diverse others, animals conceived of in this manner, not only extend the possibilities for life's continued flourishing, but usher in new modes of noticing. Pedagogically, the holobiont invites us to trouble hierarchical ranking and ordering schemes. There are no superior or inferior partners in the holobiont exchange, as Donna Haraway explains; the holobiont organism, whether human, coral or bobtail squid, 'does not designate host + symbionts, because *all* the players are symbionts to one another, in diverse kinds of relationalities and with varying degrees of openness to attachments and assemblages with other holobionts' (2017: M26). There are no winners or top-dogs in the game of life, but rather holobionts (and their coevolved or conditional symbionts) in perpetual relational entanglements with other holobionts in ever decreasing and increasing scales – from individual animals to mycorrhizal networks, kelp forests, coral reefs, and the planetary-scale flows of co-evolutionary Gaia (Gilbert, 2020). By this animating figuration, the individual of any species, human or not, is nothing without a pluriform pack of multiple and diverse inescapably entangled relational others.

Pedagogically, the holobiont calls us toward learning and teaching methodologies grounded in relational entanglement as well as recognition of 'Gaia', the Earth system in all its 'symbiogenetic glory', the physiological chemistry or metabolism of which is emergent from the activity of trillions of interlinked holobiont bodies (including our own) and whose coordinated proprioceptive movements make continued living possible (Margulis, 1998: 128). Gaia, the superlative holobiont, which has sustained its ecosystem cycles via coordinated forms of multispecies proprioceptive communications across geological life-ages, should be the central focus of Anthropocene-appropriate educational systems. All holobiont bodies are proprioceptive and have perspectives worth considering. All holobiont bodies sing to one another in visual, haptic, olfactory, and other yet undiscovered perceptual/communicative domains. Bodies and ecosystems alike are, however, conditional assemblages. Extinction events (such as the one that human actions are currently engendering) will destroy many kinds of embodied perspectives, including our own, but the interminable holobiont song – that of Gaia – will remain, singing into being the diversity, complexity, shimmer, and sheer abundance of Earthly life long after we are gone. Holobiont 'cacophonies and harmonies' will return, as they have done after prior mass extinction events, calling into being once more new kinds of bodies, ecosystems and relationalities in the wake of ruination and destruction (Margulis, 1998: 128).

Trans-corporeality

Intersectional feminist scholars Astrida Neimanis and Rachel Loewen Walker (2014: 558) describe our relationship to climate change and biodiversity destruction as one of 'weathering'. The meteorological cycles of the planetary holobiont, the Earth system (or Gaia), maintains and connects all human and non-human bodies, making it unfeasible to think of humans as 'discrete in time and space' and somehow 'outside of the natural milieu that sustains them' and 'transits through them' (2014: 563). 'Like all other bodies of water, human bodies are replenished by rain; the winds that whip around us also fill our lungs and feed our blood; the sun's warmth allows us, like sea algae and sunflowers, to flourish' (2014: 563). Humans are not floating above the world,

immune to the material conditions they have unleashed upon it. Environmental change in the form of climate-change, ocean acidification and a burgeoning biodiversity crisis are weathering events that we humans are inextricably entangled with. Feminist new materialist scholar Stacy Alaimo's (2010: 15) notion of trans-corporeality connects with this notion of entangled weathering by taking bodies even further outside the safe and discreet humanist demarcation of the human, emphasizing mutual trans-species 'vulnerability' as a fundamental condition of the often destructive 'material interchanges' between humans, other lifeforms, geographical places, and 'vast networks of power' in a manner that provokes 'ethical and political actions' around issues of 'environmental justice, environmental health, and queer politics'. Like Deleuze and Guattari, Alaimo is critical of 'the western metaphysical notion of human subjectivity as [constituting] the centre of the world' (2016: 283). Her notion of the trans-corporeal, as Alaimo explains in an interview with Julia Kuznetski (2020), displaces the human from his ontological throne at the epicentre of the world, while ethically and politically challenging the critical distance that has resulted from this destructive centrism. The trans-corporeal entails the very 'opposite of distancing or dividing the human from external nature' by suggesting, as with Margulis' holobiont concept, that humans are in a state of inextricable corporeal enmeshment with 'the material physical world' and that this is something that educators need to make more potently visible in their curriculum designs, classroom discussions and research practices (Kuznetski and Alaimo, 2020: 139). Demanding that we recognise, pedagogically and otherwise, the co-extensiveness of material needs, pleasures, and dangers across species divides, trans-corporeality extends the entangled being of bodies, human or not, to a radical epistemological entanglement between material and theoretical bodies that challenges artificially imposed dualities, dichotomies, and separations. A trans-corporeal pedagogical methodology requires that we combine a critical ethical and political awareness of shared trans-species vulnerabilities with a critical grasp of human ecological accountability overall; to remember, in other words, that 'the human [represents] a pivotal node in the networks of consumption and pollution that destroy ecologies' (Alaimo, 2016: 112). Such a methodology, I suggest, asks that we consider (as well as teach about) the free labour provided to capitalism by innumerable non-human others (such as the coral reefs and kelp forests that sustain oceanic biodiversity, the protist-bacterial-viral-fungal-invertebrate assemblages responsible for the upkeep of our top-soils, oceanic food-chains and immune systems, as well as the oceanic phytoplankton, sea-grass meadows, mangroves, terrestrial wetlands and forests that recycle and sustain our planetary atmosphere and its water, carbon and other cycles, etc.). Across all subjects and fields of knowledge production, we need to 'decolonise' from 'fantasies of transcendence and imperviousness that render environmentalism [and ecological awareness] as merely elective and external enterprises' (Alaimo, 2016: 113). This work is the work of education, which— can mobilise insights from 'art, literature, and popular culture' to 'make scientific facts and data' about the trans-corporeal enmeshment of biological life, 'into something much more meaningful' and impactful (Kuznetski & Alaimo, 2020: 140).

Geontology

The last arm of octo-aesthesis troubles me, as it meant to. Australian anthropologist, feminist (new) materialist and filmmaker Elizabeth Povinelli's (2016) concept of geontology shakes us out of our humanistic/anthropocentric comfort zones by agitating the life/non-life divide that lies at the heart of liberal humanism and capitalism. Spectral figurations of the lifeless desert, the un-living virus, and the animist (that grants agency to the living and non-living alike) weave in and out of her *Requiem to Late Liberalism* (2016). Working with Aboriginal Karrabing stories of geological ancestors like the fossilised *durlgmö* snake and the Mangense formation of *Two Women Sitting Down*, Povinelli posits that life itself as we know it 'is not the miracle – the dynamic as opposed to the inert of rocky substance' (2016: 17). As the concept of the Anthropocene – the geological epoch of the human – makes clear, humans have now assumed geological agency; no longer simply as biological organisms moving across geological landmasses, but as subterranean geological agents leaching elemental forces of unmaking from and upon Earth's ontological bedrock. Yet, paradoxically, the agency of rock-ness remains ultimately elusive, beyond our ken. It is 'nonlife' – the rocks – 'that created what is radically not, Life', just as we are now uncreating it with our planet-altering actions; and it is nonlife, the rocks, that 'will in time fold this extension of itself' – namely ourselves – 'back into itself as it has already done so often and long' (2016: 17). Povinelli's dynamic return to nonlife plays with the blurred threat of mass extinction that looms large in our age of climate change as well as our shocking stupefaction and inability to care or do anything much about it. She mocks liberalism's empty promise that 'we can change' and yet remain 'the same, even more of what we already are' (2016: 29). That we must become something else, and urgently, is unquestionable, but for Povinelli (2016) there is no guaranteed outcome about the shape or success of our endeavours. She reminds us that Gaia, which extends down into the mantle and up into the atmosphere, is more than just life. It can unmake life – and has done so many times in the past – by altering the conditions certain forms of life (such as our own) need in order to continue. Our destructive humanist fictions of standing alone and unique amongst Earth's diverse lifeforms have perhaps already taken us much too far for there to be any turning back. 'Get out the musical instruments. Put on the robes. Say a mass of remembrance for the repose of the souls of the dead. Cling to life even in the form of its mass extinction' (2016: 177). Povinelli's chilling requiem is a reminder of just how far beyond the pale we are now. It reminds me too of the kinds of evolutionary backtracking and sacrifices that the octopus has had to make to keep its lineage going through five (or perhaps more) previous mass extinction events. Surviving extinction, as the octopus proves, requires a kind of embodied flexibility. Having preserved the archaic RNA-editing capabilities once thought to be the exclusive provenance of ancient bacteria, octopuses have forfeited longer-lifespans to make themselves more adaptable and resilient on the fly to the kinds of events that have invariably accompanied all mass extinctions, namely, rapid, and unpredictable climate change in conjunction with ocean acidification (Yong, 2017). While Anthropocene seas, warmed and acidified by climate change, exhausted by overfishing, and polluted by microplastics and industrial run-off, are increasingly hostile to most animals, coleoid cephalopods (along with

certain types of jellyfish) may prove to be notable exceptions (Yong, 2017). Chimeric creatures such as these, perfectly adapted to changeable environments, supported by transversal HGT and RNA-editing capabilities – once thought to be the exclusive domain of ancient microbial lineages, are strangely sustained by our thoughtless unmaking of the Earth-system (Quammen, 2018). Long after we and our more-recent evolutionary mess-mates – the mammals, birds, and many insects – are gone, inherently mutable cephalopods might still be around to greet whatever new iteration of the biosphere has arisen out of our ashes.


Conclusion

Octo-aesthetics suggests a pedagogical process in which understanding is developed through affects and interpretations, transmuted through engagements with differences in embodied perception and perspective. As a transversal undertaking, it places imagination and the need to engage with different kinds of embodiment and cognition beyond the human at the core of educational methodologies appropriate to times of ruination and crisis. Learning, as Ramey writes, only really happens when we confront and even create 'dramatic encounters with imperceptible affects and forces: moments when embodied sensory intensities provoke the mind to interpret and to create' (2013: 171). Such a schizoanalytic grafting together of uncanny perceptual movements and becomings mobilises bewilderment to amplify an awareness of nature's shimmering ancestral power and emphasizes the need to ecosophically think with the three ecological registers that define our existence. Extended via newfangled technologically mediated proprioceptive capacities and affordances, enriched by the discovery of nature's symbiogenetic holobiont assemblages and mindful of the trans-corporeal nature of embodiment, ecosophic learning and teaching modalities might yet generate more fluid perspectives resilient to the terrible forces of unmaking (such as climate change and rampant biodiversity destruction) unleashed by the advent of the Anthropocene (Povinelli, 2016).

Rather than cling to outmoded categorizations and fictions about what it means to be a human, a pedagogy grounded in the protean ephemeral subjectivity of the shape-shifting octopus asks, rather, 'what formations we are keeping in existence or extinguishing?' (Povinelli, 2016: 28). The earth of the Anthropocene is witnessing the extinction of ecological interactions. Resilience and renewal cannot keep pace as human activities (such as plantation-based agriculture, deforestation, overfishing, greenhouse gas-emissions, toxic pollution, etc.) intersect catastrophically with 'the lives, needs and connectivities of animals and plants' (Rose 2022: 150). Humans are not exempt from all this death-dealing. Unless we radically change our onto-ethico-epistemological relations to the Earth (and, by extension, to its manifold entangled lifeforms), the Earth will withdraw its care from us, just as we have from it. Recognising the relational proximity and commitments that we share with the Earth's diverse others doesn't appear to come naturally to humanised and economised humans, for whom 'thinking of a world in which we are not central is not only incredibly difficult but also aesthetically repulsive' (Khan, 2015). Ecological aesthesis – the capacity to notice the world and participate onto-ethically in its diverse processes of worlding and becoming – requires a bewildering ecosophy of situated perspectives, trans-corporeal

interconnectedness, and environmental recognition. Learning and teaching the uncanny is a defamiliarising process that interrogates the flawed assumptions and actions that have led us into 'this era of man-made mass death' (Rose 2022: 150). Octo-aesthetics invites us to take onboard an array of imaginative and transversal concepts as learning and teaching methodologies that send us spinning away from menacingly obsolete humanistic logics and god-tricks into new landscapes of limited knowledge, cautious survival and modest hopes. It calls on us to suspend habituated and dangerously outdated ways of seeing and, in so doing, to hold a space of virtual potentiality that is intensive, extensive; in dynamic proximity rather than toxic dysbiosis with the world's innumerable and divergent others.

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References

- Alaimo, S. 2010. *Bodily natures: Science, Environment, and the Material Self*. Bloomington, IN: Indiana University Press
- Alaimo, S. 2016. *Exposed: Environmental Politics and Pleasures in Posthuman Times*. Minneapolis: University of Minnesota Press.
- Braidotti, R. 2006. *Transpositions: On Nomadic Ethics*. Cambridge: Polity Press.
- Braidotti, R. & Bignall, S. 2019. Posthuman Systems, in Braidotti, R. & Bignall, S. (Eds.). *Posthuman ecologies: Complexities and process after Deleuze*. New York: Rowan & Littlefield, 1–16.
- Boetzkes, A. 2015. Ecologicity, vision and the neurological system, in Davis, H. & Turpin, E. (Eds.). *Art in the Anthropocene*. London: Open Humanities Press, 271–282.
- Carstens, D. 2022. Mapping entanglement: Mobilising the uncanniness of machine vision, in Beier, J.L. & Jagodzinski, J. (Eds.). *Ahuman Pedagogy: Multidisciplinary Perspectives for Education in the Anthropocene*. Palgrave Macmillan, 99–121.
- De Castro, V. 2016. *The Relative Native: Essays on Indigenous Conceptual Worlds*. HAU: University of Chicago Press.
- Deleuze, G. 1994. *Difference and repetition*, trans. P. Patten. London: Athlone Press.
- Deleuze, G & Guattari, F. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. B Massumi. London: Continuum.
- Deleuze, G. & Parnet, C. 1987. *Dialogues*, trans. H. Tomlinson & B. Habberjam. New York: Columbia University Press.
- Gilbert, S. 2020. Metaphors for a new body politic: Gaia as holobiont, in Latour, B., Schaffer, S. & Gagliardi, P. (Eds.). *A Book of the Body Politic: Connecting Biology, Politics and Social Theory*. Venice: Fondazione Giorgio Cini, 75–88.

- Godfrey-Smith, P. 2018. *Other Minds: The Octopus and the Evolution of Intelligent Life*. London: William Collins.
- Geerts, E. & Groen, A. 2022. Philosophical post-anthropology for the Chthulucene. *Internationales Jahrbuch für philosophische Anthropologie*, 10(1): 189-207.
- Guattari, F. 1995. *Chaosmosis: An Ethico-Aesthetic Paradigm*. Trans. J. Pefanis. Paris: Power Institute
- Guattari, F. 2000. *The Three Ecologies*. Trans. I. Pindar & M. Sutton. London: Bloomsbury.
- Guattari, F. 2002. Remaking social practices. *Autonome media*. Available at: dev.autonome media.org/node/1396 (Accessed: 1 January 2023).
- Gray van Heerden, C. 2019. The autochthonosphere: The logics of plantations and the moving target, in Gray van Heerden, C. & Eloff, A. (Eds.). *Deleuze and anarchism*. Edinburgh: Edinburgh University Press, 237-256.
- Haraway, D. 1988. Situated knowledges: the science question in Feminism and the privilege of partial perspective. *Feminist Studies*, 14(3): 575-599.
- Haraway, D. 2017. Symbiogenesis, sympoiesis, and art science activisms for staying with the trouble, in Tsing, A., Swanson, H., Gan, E. & Bubandt, N. (Eds.). *Arts of living on a damaged planet: Monsters*. Minneapolis: University of Minnesota Press, M25-50.
- Khan, N. 2015. Towards a poetics of artificial superintelligence. *After Us*. Available at: <https://medium.com/after-us/towards-a-poetics-of-artificial-superintelligence-ebff11d2d249> (Accessed: 12.12.2022).
- Kuznetski, J. & Alaimo, S. 2020. Trans-corporeality: An interview with Stacy Alaimo. In *Ecozon European Journal of Literature, Culture, and Environment*, 11(2): 137-146.
- Margulis, L. 1998. *Symbiotic planet*. Amherst, MA: Basic Books.
- Mather, J. 2019. What is in an octopus's mind? *Animal Sentience*, 4(26): 1-29
- Narby, J. 1998. *The Cosmic Serpent: DNA and the Origins of Knowledge*. London: Phoenix.
- Neimanis, A. & Walker, R.L. 2014. Weathering: Climate change and the thick time of transcorporeality. *Hypatia*, 29(3): 558-575.
- Pederson, H. 2019. *Schizoanalysis and Animal Science Education*. London: Bloomsbury.
- Povinelli, E. A. 2016. *Geontologies: A Requiem to Late Liberalism*. Durham: Duke University Press.
- Quammen, D. 2018. *The Tangled Tree: A Radical New History of Life*. London: William Collins.
- Ramey, J. 2013. Learning the Uncanny. In Masny, D. & Semetsky, I. (Eds.). *Deleuze and Education*. Edinburgh: Edinburgh University Press, 177-195.
- Roberts, 2020. The becoming octopus meditations [BoM 1-8]. *O(rphan)d(rift>) Archive*. Available at: <https://www.orphandrifarchive.com/if-ai/becoming-octopus-meditations/> (Accessed: 04.05.2023).
- Rose, D.B. 2022. *Shimmer: Flying Fox Exuberance in Peril*. Edinburgh University Press.
- Snaza, N. 2013. Bewildering education. *Journal of Curriculum & Pedagogy*, 10(1): 38-54.
- Snaza, N. 2019. *Animate Literacies*. Durham: Duke University Press.
- Snaza, N. 2020. Asexuality and erotic biopolitics. *Feminist Formations*, 32(3): 121-144.
- Tchaikovsky, A. 2019. *Children of Ruin*. London: Orbit.

- Tsing, A. 2015. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton: Princeton University Press.
- Yong, E. 2016. *I Contain Multitudes: The Microbes within Us and a Grand View of Life*. New York: Ecco.
- Yong, E. 2017. Octopuses do something really strange to their genes, 6 April. *The Atlantic*. Available at: <https://www.theatlantic.com/science/archive/2017/04/octopuses-do-something-really-strange-to-their-genes/522024/> (Accessed: 4 May 2023).