

Reimagining entrepreneurship education in the Anthropocene. A critical posthuman practice approach

Karen Verduijn^{a,*}, Ulla Hytti^b , Serxia Lage Arias^a

^a Vrije Universiteit Amsterdam, the Netherlands

^b University of Turku, Finland

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ABSTRACT

As entrepreneurship education (EE) faces mounting pressure to respond to the socio-ecological polycrisis of the Anthropocene, prevailing human-centred, business growth-oriented pedagogies appear increasingly insufficient. This conceptual manuscript advances a critical posthuman practice approach to entrepreneurship education that foregrounds multispecies relationality, response-ability, and ethical co-becoming. Building on entrepreneurship-as-practice scholarship, and drawing in particular on a critical posthumanist practice approach, we extend emerging calls to rethink entrepreneurship (and EE) beyond anthropocentrism by translating multispecies thinking into educational practice. Drawing on illustrative examples from posthuman and eco-relational pedagogies in higher education we develop a set of propositions for a multispecies entrepreneurship pedagogy to reimagine EE as embodied, situated, and relational, involving both human and more-than-human actors as co-participants.

We argue that such a pedagogy can cultivate response-able entrepreneurs oriented toward ecological justice, care, and multispecies flourishing. The manuscript contributes to entrepreneurship-education-as-practice by offering a novel theoretical framing and concrete pedagogical orientations for post-anthropocentric futures.

1. Introduction

The Anthropocene, as a concept, refers to the proposition that human activities have become a significant force shaping Earth-system processes, with long-term and documentable effects on the environmental conditions that sustain human and non-human life. These transformations are often linked to histories of industrialisation, colonial expansion, and extractive forms of economic organisation (Moore, 2015), and have been associated with wide-ranging forms of planetary environmental deprivation (Benner et al., 2021). Against the backdrop of the Anthropocene, an urgent question emerges: how, particularly within modernised Western contexts, do we educate entrepreneurs who contribute response-ably (Haraway, 2016; Braidotti, 2019) to the co-enactment of ethical and future-proof solutions for a postanthropocentric world (Ergene and Calás, 2023).

There is a growing body of scholarship that calls for entrepreneurship education (EE) to more directly engage with societal challenges including the contemporary ecocrisis situation (Berglund and Verduijn, 2018; Berglund et al., 2020, 2021; Verduijn and Berglund, 2020; Dodd et al., 2022; Loi et al., 2022; Walsh et al., 2024; Brentnall and Higgins, 2024). Building on such

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* Corresponding author.

E-mail address: karen.verduijn@vu.nl (K. Verduijn).

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contributions, this manuscript adopts a critical posthuman practice approach (Braidotti, 2019; Gherardi, 2022; Cozza and Gherardi, 2023) for developing multispecies pedagogies for entrepreneurship education. Within the university classroom, we position these pedagogies as enabling entrepreneurship as a more-than-human practice and fostering forms of learning that attend to the entanglements between human and nonhuman actors. In doing so, we extend entrepreneurship-as-(post)human-practice research (e.g., Calás et al., 2018; Cnossen et al., 2024; Bell, 2025; Thomsen et al., 2024), into the educational context.

In particular, we build on Thomsen et al. (2024), who introduce a multispecies lens to foreground nonhumans and emphasize their rights, agency and welfare in business practices aimed at fostering multispecies coexistence. While their work highlights the power of environmental education in making entrepreneurship inclusive of more-than-human others, it offers limited guidance on how such perspectives can be translated into pedagogical practice. This manuscript addresses this omission by articulating concrete critical posthuman and multispecies pedagogies for university-based education. In what follows, we first discuss how Entrepreneurship as Practice (EaP) has been taken up in entrepreneurship education. We then elaborate the proposed approach and develop a proposition for EE-specific critical posthuman, multispecies pedagogical practices.

2. Reframing entrepreneurship education

The EaP approach offers a productive starting point for rethinking entrepreneurship education by moving the attention from ‘who the entrepreneur is’ (e.g., traits and intentions) to the practices, activities, routines, artefacts, conversations, and relations that constitute entrepreneurial activity. In educational settings, this involves creating room for both teaching and researching practices (e.g., how to pitch, scaffold prototyping interactions, do customer conversations, manage bricolage, enact business-model work), rather than focusing solely on abstract models or merely aiming to increase entrepreneurial intention (Thompson et al., 2020). An emerging body of work has begun to operationalise this orientation. Exemplary contributions include Shankar and Corbett (2024) on ‘quasi-practice’ as a means for professional development of the entrepreneurship educator and of practice-based entrepreneurship education. Related work includes Thompson and Illes’ (2021) practice-theory account of entrepreneurial learning (i.e., video-ethnography, situated learning), with clear implications for pedagogy; and Campbell’s (2019) interactional analyses of entrepreneurial activity with direct pedagogical relevance; and Donaldson et al.’s (2025) recent ‘Models-based’ practice approach addressing persistent challenges in EE - all of which carry important pedagogical implications. Collectively, these contributions adopt a practice approach in various forms and generally focus on how EE practices are enacted.

While valuable, these practice contributions in entrepreneurship education have paid comparatively little attention to critically examining how EE itself is enacted. Critical entrepreneurship scholarship challenges dominant entrepreneurial narratives centred on heroic individualism, economic growth, and neoliberal market logics (Ogbor, 2000; Armstrong, 2001; Berglund, 2013; Ozkazanc-Pan and Clark Muntean, 2018; Delladio and Caputo, 2025; Lubinski and Tucker, 2025). Building on this critique, a critical EE (Berglund and Verduijn, 2018; Hytti, 2018) seeks to decouple entrepreneurship and its teaching from a narrow focus on business creation and growth and the reproduction of neoliberal values (Jones and Spicer, 2009; Lackéus, 2017). Instead, it advocates approaches that address contemporary socio-ecological crises (Berglund et al., 2020; Verduijn and Berglund, 2020; Dodd et al., 2022; Loi et al., 2022; Walsh et al., 2024; Brentnall and Higgins, 2024). Such contributions seek to advance EE by pluralising its epistemological foundations, bringing visibility to alternative ways of knowing and organising that are often marginalised in mainstream, Western approaches. This includes feminist and care-centred perspectives, solidarity-based practices, and Indigenous and local knowledge systems, which challenge dominant, individualistic and market-centric framings of entrepreneurship (Calás et al., 2009; Woods et al., 2022; Abdallah, 2025). Such approaches encourage students to critically reflect on the social and environmental consequences of entrepreneurial action and to imagine alternative forms of value creation grounded in responsibility, sustainability, and justice (Fayolle and Redford, 2014).

In parallel, a growing body of business education scholarship has begun to engage with the challenges posed by ecological crises (Gasparin et al., 2020; Arruda Fontenelle, 2023; Jamil et al., 2023), and this debate has extended to EE. Within this space, scholars highlight the need for educators to connect around a shared purpose enabling change to emerge through networks of relationships (Brentnall and Higgins, 2024). Universities are increasingly seen as catalysts in the race for climate action, particularly through their role in shaping students’ attitudes, intentions, and capacities to become agents of change (Yaqzan et al., 2025). This requires them to develop supportive and nurturing learning environments in which students can understand the interlinkages between the environmental, social, and economic dimensions of sustainable development (El-Awad et al., 2025). Through action-based and experiential pedagogies, students may be better equipped to imagine and develop inclusive, circular, and regenerative solutions (Walsh and Hynes, 2025).

Building on these developments, we propose advancing a more-than-human, multispecies perspective within EaP, thereby directly responding to calls for deeper and more rapid transformations in entrepreneurship education (Kickul et al., 2025). Rather than designing modules around discrete practices (e.g., customer interviewing; prototyping; pitching), and teaching how those practices are done, we explore how a critical posthuman EaP approach can strengthen EE. This approach adopts a relational stance that specifically emphasizes the practices and perspectives of multiple actors, both human and ‘more-than-human’. This lays the ground for developing (harmonious) interspecies coexistence and foregrounding also that non-humans have “rights, agency, and welfare in business practices that affect them” (Thomsen et al., 2024, p. 7).

3. More-than-human practice theorizing

To theoretically ground the proposed shift toward a more-than-human, multispecies, perspective, we adopt a posthumanist practice

approach (Braidotti, 2019; Cozza and Gherardi, 2023) to reconceptualize entrepreneurial practice as a more-than-human phenomenon (e.g., Calás et al., 2018; Cnossen et al., 2024; Thomsen et al., 2024; Bell, 2025). Such an approach foregrounds relationality as the central epistemological and ontological principle, thereby destabilizing human exceptionalism and recognizing the agency of nonhuman and more-than-human actors in processes of entrepreneuring. Cozza and Gherardi (2023) argue that a posthuman epistemology of practice allows us to view the ongoing interaction between doing and knowing, the knowing subject and the known object, social and material, humans, nonhumans, and more-than-humans. Drawing on Braidotti (2019), they challenge dualistic categories, such as nature/culture, subject/object, or mind/body, that privilege the human and marginalize other forms of life and matter. Reconfigured through a posthumanist lens, practice theory embraces a relational epistemology in which knowledge and action emerge through entangled material-discursive practices.

A growing body of work adopts a more-than-human perspective in entrepreneurship theorizing. Bell (2025), for example, advances a more-than-human understanding of entrepreneurship in her study of craft entrepreneuring, showing how artisanal bakers engage in ‘fermenting alternatives’ through embodied, multispecies relations with yeast, flour, and other natural actors. Here, entrepreneuring is conceptualized as “a vital, self-organizing, emergent process” (p. 1), a form of “becoming with bread” (p. 7) that foregrounds proximity, connection, and collective agitation. This view aligns with prior work that similarly decentres the human; Calás et al. (2018) conceptualize social entrepreneurship as a more-than-capitalist process of becoming in the Anthropocene, while Cnossen et al. (2024) theorize entrepreneuring as multispecies composting, emphasizing generative, multispecies processes also involving decay and regeneration. Taken together, these contributions recast entrepreneuring as remaining open, attentive, and curious towards others, thus challenging anthropocentric logics that exclude animals, plants, and ecologies from consideration. In this sense, more-than-human entrepreneurship gestures toward collective, entangled future-making (Haraway, 2016).

Complementary perspectives from future-oriented research (Laine, 2025) similarly highlight that futures are not linear but rather messy, situated, and co-constituted through multispecies entanglements. Such orientations resonate with posthumanist calls to cultivate response-able futures enacted through practices of coexistence, care, and mutual becoming. Together, this work positions entrepreneurship as a multispecies process of future-making, grounded in relational interdependence in the Anthropocene. Building on this, a critical posthumanist practice perspective invites entrepreneurship education to embrace a broader ontological and ethical reorientation that recognizes the distributed, interdependent nature of life, agency, and hope in the Anthropocene.

4. Multispecies pedagogy and/in higher education

Posthuman practice theory increasingly influences pedagogy, though its application in higher education remains limited. Existing work is largely situated within environmental education, where posthumanist, more-than-human, and eco-relational approaches address planetary crises and the need for ecological justice (Lin et al., 2023; Hawke and Spanning, 2022). In doing so, they seek to repair broken relationships - not only among humans but also between humans and the more-than-human world. Such approaches aim to cultivate deep relationality, responsiveness, and transformation, foregrounding education as a site for reimagining kinship, care, and coexistence. For example, Stein et al. (2023) argue for pedagogical practices that resist extractive, progress-oriented narratives and instead nurture ecological humility, situated accountability, and collective reparation. In a similar spirit, Lin and colleagues (2023) advocate for ecojustice-based courses that integrate diverse modalities of learning - readings, discussion, meditation, arts, and direct engagement with nature - to foster *kinship*. Learning in this context becomes an affective and ethical process of bonding and companionship, allowing students to reconnect with one another and with the living world.

Emerging pedagogical work also demonstrates how the more-than-human world can act as a teacher. For instance, Ferns (2024) explores how practices of ‘deep nature connection’, such as forest bathing, can help students transcend the human–nature dualism (and the distance between them). By facilitating immersive encounters with forests, Ferns invites learners to experience nature as sentient and communicative, cultivating a ‘deep spiritual connection’ that sensitizes them to the suffering of the Earth and to possibilities for healing. Similarly, Hawke and Spanning (2022) describe an experimental course at the University of Innsbruck that centers on waterscapes as pedagogical partners. Students are encouraged to ‘meet with’ a familiar body of water and engage with Indigenous ecological perspectives and rewilded thinking. Through what the authors call ‘relating wider’ and ‘digging deeper’, the course repositions waterscapes as “both sentient and intelligent creators, and conveyors of knowledge” (p. 198). In this way, the waterscapes become the co-teachers, guiding students toward what the authors call ‘true stewardship’, where “intelligent pathways become more evident, as we lean in to know better what the natural library is telling us” (p. 212). Mcphie and Clarke (2020) extend this line of thought by reimagining outdoor learning as an encounter with *living processes* rather than objects. In their view, plants and trees are not to be seen as passive subjects of observation but, indeed, active co-creators of knowledge. Drawing on posthuman and nonessentialist conceptions of nature, they propose a pedagogy of learning-with the world, where nonhuman beings are moved out of ‘the margins of the margins’ and recognized as participants in meaning-making.

Together, these pedagogical experiments foreground approaches in higher education that decenter the human and attend to the entangled kinships between humans and diverse nonhuman others (Carstens, 2016). This perspective requires disrupting the (pervasive) separation of human and nature that underpins much of modern education (Misiaszek and Rodrigues, 2023). In doing so, these approaches illustrate how higher education can cultivate response-able learners who are capable of encountering, listening to, and learning from the more-than-human world. As Ferns (2024) suggests, this involves not only asking how trees understand each other, but also how we might learn to understand trees.

5. Alternative, transformed, multispecies entrepreneurship pedagogical practices

The question, then, is pedagogical: how might EE enable students to engage more response-ably with the multispecies worlds in which entrepreneurial practices are embedded? Fig. 1 translates the preceding theoretical argument into a posthuman practice framework for EE.

A posthuman practice framework for EE is not merely concerned with ‘doing less harm’, but with striving toward no harm and, ultimately, regeneration (e.g., Konietzko et al., 2023). It invites students to critically and creatively rethink entrepreneurship through posthumanist, eco-relational, and more-than-human lenses. Pedagogically, this means moving learning beyond exclusively human-centred spaces and treating campus grounds, parks, rivers, community gardens, living beings, weather, soil, and water as co-learning environments and legitimate sources of knowledge. Classes might therefore include sensory grounding, short meditations, or outdoor encounters that cultivate attentiveness to more-than-human presences and relations.

We distinguish three related modes of engagement: attuning to, attuning with, and attuning via. *Attuning to* foregrounds noticing more-than-human presences and processes through sensory, embodied attention—for example, observing seasonal changes, listening to birdsong, or attending to weather patterns. *Attuning with* emphasizes situated relational engagement through practices of care, participation, and reciprocity, such as caring for a community garden, restoring a local habitat, or participating in citizen-science activities. Building on these, *attuning via* invites students to experiment with more-than-human modes of sense-making as generative lenses for rethinking entrepreneurship. This does not imply that students can transparently know or speak for forests, rivers, soils, or other beings. Rather, attuning via involves a speculative, embodied, and ethically cautious practice of perspective-shifting: asking what ecological dynamics might reveal about entrepreneurial organising, and how entrepreneurial practices might be reimagined through attention to processes such as regeneration, interdependence, adaptation, and boundaries.

By the end of a module, students should, for example, be able to critically assess how Western humanist and capitalist assumptions shape conventional entrepreneurship education; articulate posthumanist and more-than-human perspectives on innovation and enterprise creation; engage in reflexive, embodied, and relational learning with the more-than-human world; and develop alternative models of enterprise grounded in reciprocity, care, justice, and community. Course activities can take many forms, but should be oriented toward incorporating posthuman practice approaches: reading ‘the entrepreneur’ differently, learning with particular landscapes or communities, and exploring what entrepreneurship might look like if nonhumans were considered as stakeholders (see, e.g., Vlasov, 2021; Muñoz and Hernandez, 2024). Treating soils, rivers, pollinators, and ecosystems as participants whose presence and well-being enable entrepreneurial possibilities shifts the focus from using nature as a setting or resource toward recognizing ecological relations as constitutive of entrepreneurial practice.

One practical route is landscape-based learning. Students might engage with a campus greenspace or nearby ecosystem as a pedagogical partner rather than a passive setting for observation. Through field notes, sketches, photographs, or sensory maps, they can attend to multispecies interactions, seasonal changes, sounds, weather patterns, and signs of disturbance, and then translate these observations into entrepreneurial questions. What forms of organising become visible through ecological interdependence? How might regeneration, resilience, or care alter prevailing understandings of value creation? Collaboration with community groups involved in

A Posthuman Practice Framework for Entrepreneurship Education

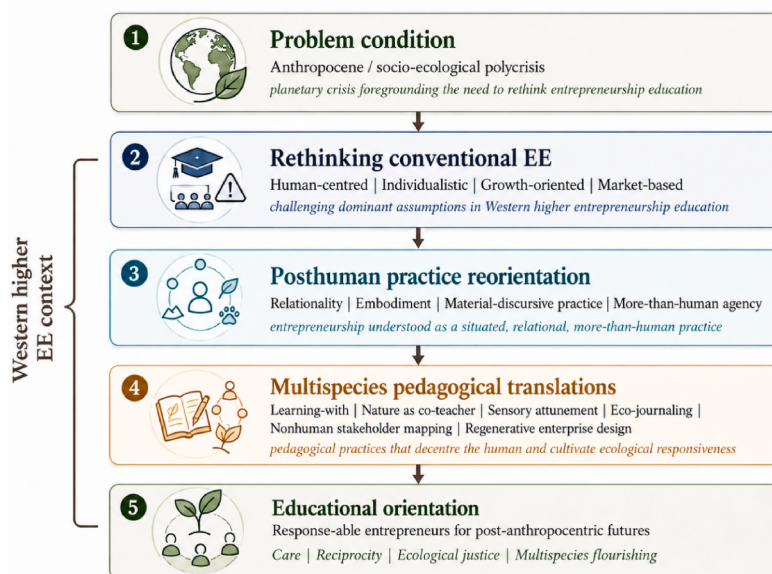


Figure: authors' conceptualisation

Fig. 1. A posthuman practice framework for entrepreneurship education.

habitat restoration or food-growing initiatives can deepen this work by connecting ecological learning to locally situated practices of collective value creation. Classroom reflection can then connect these observations to broader questions about how entrepreneurship might contribute to ecological restoration and community wellbeing.

Such learning should not be confined to harmonious or easily accessible encounters with nature. Many socio-ecological challenges unfold in more ‘troubled’ places beyond campus. Encounters with polluted waterways, industrial sites undergoing transition, or communities facing environmental injustice can expose students to contested multispecies realities in which entrepreneuring takes place (Haraway, 2016). Combining observation, conversation, and reflexive documentation, students can examine how ecological damage, social inequalities, and entrepreneurial activity become entangled, and consider which forms of entrepreneurship might contribute to regeneration rather than extraction. Such encounters also bring questions of responsibility, vulnerability, and uneven exposure to ecological harm into the pedagogical frame.

These activities may also draw on Indigenous entrepreneurship scholarship, which foregrounds land stewardship, reciprocity, collective flourishing, and community-based economic development (Peredo et al., 2004; Padilla-Meléndez et al., 2022). These perspectives challenge the treatment of nature merely as a resource and emphasize relationships between people, place, cultural continuity, and ecological wellbeing. Learning is often understood as relational, intergenerational, and embedded in community ties and traditional knowledge systems. Particularly relevant pedagogically is Woods et al.’s (2022) discussion of ‘Ako’, a Māori pedagogy of reciprocal learning. Rooted in the Māori value of Whakapapa, Ako emphasizes belonging through relationships between people and places, while understanding knowledge as serving collective interests and enabling connections to broader systems of meaning. Such perspectives can help students question individualistic and extractive assumptions and encounter alternative ways of relating enterprise, place, community, and ecological wellbeing.

Assessment, in turn, could take the form of eco-journals, sensory maps, creative artefacts, performances, or reflexive accounts in which students consider what a nonhuman co-teacher revealed and how this informs alternative models of enterprise. Eco-journals, for example, can document both ecological observations and shifts in students’ assumptions about agency, value, and entrepreneurship, combining written reflection with sketches, photographs, or sound recordings. These insights can then be translated into proposals for community initiatives, regenerative business models, or alternative value-creation practices. In this way, a critical posthuman practice approach opens up an ethically grounded set of multispecies pedagogical practices for co-enacting response-able postanthropocentric solutions, whether through enterprises or other entrepreneurial initiatives.

6. Wrapping up

Building on EaP’s shift from entrepreneurial subjects to situated practices, this manuscript has developed a posthuman practice framework for Western higher entrepreneurship education. Its contribution lies in extending EaP beyond exclusively human actors and translating this theoretical reorientation into multispecies pedagogical practices. Drawing on Haraway (2016) and Braidotti (2019), we frame the educational orientation of this approach as becoming response-able: cultivating capacities for co-responsibility, care, reciprocity, ecological justice, and multispecies flourishing rather than treating entrepreneurial achievement as an exclusively human and individual accomplishment. In doing so, we position multispecies pedagogy as an emerging trajectory for entrepreneurship education aimed at postanthropocentric futures.

This shift, however, comes with challenges. Multispecies pedagogy is ethically complex (e.g., Huopalaainen et al., 2025), and moving more-than-human issues from the periphery to the center requires advancing field-specific methods, such as attentive listening, and a heightened sensibility (ibid.). This prompts critical questions: How can we, as entrepreneurship educators, understand and respect this complexity? How can we ‘listen with care’? How can we become aware of, and respect the multiple, varied, unique lifeworlds? (How) Can we reflect on the deeper, reciprocal processes involved in more-than-human bonding? And what additional pedagogical value might fostering deeper interspecies connections deliver? In this regard, themes of vulnerability and togetherness are already recognized in EE research and practice (e.g., Wettermark, 2020; Kickul et al., 2025), and may offer further inspiration and points of connection for moving towards a more thoughtful, inclusive and contextually relevant EE.

We also acknowledge that building long-term connections with non-humans, such as observing forests over time, their changing dynamics, and multispecies interactions, is constrained by the temporal, bounded structures of Western higher education, which typically privilege short, course-based formats. We therefore suggest that future pedagogical work and curriculum design should create spaces for longer-term engagements, enabling deeper, more extended multispecies attentiveness and sensitivity to natural temporalities.

And, we acknowledge our own epistemic positions and origins, in our case as Western academics. Our call for transformation is situated within the context of Western, university-based entrepreneurship education and thus reflects the limitations of this setting, without fully accounting for the diverse, long-standing traditions of entrepreneurial learning, such as Indigenous and community-based practices, that already intimately embrace multispecies, relational and ecologically attuned approaches.

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CRedit authorship contribution statement

Karen Verduijn: Conceptualization, Writing – original draft, Writing – review & editing. **Ulla Hytti:** Conceptualization, Writing –

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Declaration of competing interest

X The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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