

# **Cultivating a Regenerative Imagination at Art and Design Universities**

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This short paper explores how art and design universities seek to cultivate a regenerative imagination as a fundamental basis for developing personal work, transdisciplinary projects and enterprises. It aims to unfold key processes and characteristics to start addressing the question of what is (or may be) distinctive about the approach and ethos that art and design schools bring to regenerative design and innovation compared to other HEIs.

We argue that one way to position their potentially unique approach is through paying attention to the (relative) absence of conceptual and practical obstacles and inhibitors. Pivotal, art and design school members are not told that humans and the environment are fundamentally separate, or that the latter amount to ‘natural resources’ to be exploited by humans. Instead, they are encouraged to engage directly and experimentally with other beings and to apply their imaginations to perceiving relational patterns and possibilities that might or might not currently exist or be directly observable.

When moving from the ‘ecological’ to the ‘regenerative’ imagination, we find that a primary difference is that the regeneratively oriented creator or group will be ultimately searching for (and elaborating, validating) certain ‘regenerative potentials’. In short, these amount to opportunities to fruitfully and relationally participate in naturally-occurring (but increasingly disrupted and diminished) biological and ecological processes with the purpose of enhancing their ability to regenerate while speaking to human needs.

This paper reflects on an emergent modality of regenerative imagining, designing and innovating that contrasts with science and engineering-driven approaches in several important aspects, rooted as it is in a more-than-human ethos that stresses the ontological equivalence of all forms of life.

**KEYWORDS:** Imagination, regenerative design, creativity, more-than-human, interdependence.

## **Presentation introduction**

Regenerative design, living systems thinking and design for more-than-human worlds (Swanson 2006; Reed 2007; Wahl 2016; Capra & Luisi 2016; Wakkary 2021) have become prominent themes within many art and design schools in the UK, Europe, North America and beyond<sup>1</sup>. Forward-looking art and design institutions have increasingly sought to foster regenerative ways of making among their student bodies, giving rise to a panoply of experimental design projects and startups engaging with fields such as fashion, product design, architecture, digital technology and biomaterials. This raises the question: *what is*

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<sup>1</sup> We acknowledge the importance and relevance here of pre-existing, long-standing efforts to develop ‘sustainable’ design, circular economies, whole systems thinking and biomimetic approaches within design curricula (see, e.g., Faludi et al. 2023; Wilde 2020; Collet 2021).

*distinctive and special about the approach and ethos that art and design schools bring to regeneration?*<sup>2</sup> And, if it can be shown that they indeed possess a unique orientation to (creative) regeneration, how is it feeding into and shaping design school-born enterprises in ways that potentially set them apart from science and technology-driven sustainability startups originating elsewhere?

The objective of the short paper is to address these interrelated queries. We argue that a peculiar kind of ‘regenerative imagination’ and its cultivation – through specific pedagogic practices that entail transdisciplinarity – is instrumental to how art and design schools approach regeneration and thereby seek to enhance the conditions that allow life to flourish in its diverse forms, through design and innovation work.

In the next section we briefly discuss how and why art and design schools have adopted the regenerative paradigm as a key plank within their response to the ecological crisis. We then explore how regenerative values, ecological (systems) imagination and speculative design, when put together, form a ‘fertile soil’ (or ethos) within art and design schools for the emergence of various regenerative initiatives that embrace collaborations with more-than-humans. Next, we offer a short narrative of a particular case, to root our account in a real-world example. We conclude with reflections (to be expanded on in our presentation) on an emergent modality of regenerative design, innovation and entrepreneurship generated by art and design schools, pointing to further research possibilities.

## **Art and design education at a time of climate crisis: Approaching ecological challenges through the adoption of the regenerative paradigm**

University of the Arts London (UAL) and the Royal College of Art (RCA) in the UK are not alone in making the climate and sustainability emergencies central to their current

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<sup>2</sup> In this paper, we define **Sustainability** as the practice of managing resources to meet the needs of the present without compromising the ability of future generations to meet their own needs, as outlined by the Brundtland report (1987). However in reality, sustainability tends to focus on reducing harms without fundamentally altering destructive economic systems. **Ecology** is understood as the scientific study of interactions between organisms and their environments, examining the relationships and energy flows within ecosystems. **Regeneration** refers to the worldview of being aligned with principles of life as a way of being and making. This includes actions oriented towards ‘bringing back health’ e.g. through the renewal and revitalisation of degraded ecosystems, including the enhancement of biodiversity, soil health, and water cycles, as well as the transformation of social and economic systems to create resilient and thriving communities that surpass traditional sustainability goals (Wahl, 2016).

institutional strategies and public messaging. Indeed, the majority of art and design schools have accepted that, rather than a peripheral or ‘background’ concern, the ecological crisis directly affects – and is affected by – myriad forms of art and design practice. Art and design institutions now believe they have the potential to play a leading role in climate action and as ecological innovation proponents. Here, their proximity to material production (e.g., in fashion design, architecture, product design) is certain to have contributed to this shift in awareness, along with their communities’ comparatively radical, relational and holistic values. Within such institutions, there is considerable space and ‘oxygen’ for alternative worldviews, ontologies and political orientations to arise and thrive, beyond what is seen within most science and engineering-based institutions.

Notably, many art and design universities have begun to set up courses that are based on relational ecological philosophies, worldviews and transdisciplinary projects. Some examples include Aalto University’s interdisciplinary Creative Sustainability MA course as well as Lucerne University of Applied Sciences and Arts’ MA in Eco-Social Design. Also, Central Saint Martins (UAL) has launched a suite of relevant courses, from the MA Material Futures and MA Biodesign to MA Regenerative Design, with Carole Collet and Judith van den Boom driving their inception. The Royal College of Art has chosen to embed ecological concerns and design objectives across a multitude of courses (rather than setting up dedicated ‘regenerative’ courses) across fashion and architecture as well as technology-driven design.

It can be argued that through these developments, diverse art and design schools have gradually adopted a holistic regenerative paradigm as a basis for their ecological policies, educational offerings and research activities. They have chosen to contest dominant notions of ‘sustainability’ as insufficient (Reed, 2007) or inappropriate in terms of educating students who can meaningfully and effectively tackle the ecological emergency, and they are continuing to critique technologically-driven philosophies that seek to control, subdue or geoengineer the living world from an anthropocentric perspective. Rather, art and design institutions increasingly subscribe to different variants of posthumanism (not to be confused with transhumanism; see Wolfe 2010), post-anthropocentrism, post-colonialism, pluriversal thought (Escobar, 2018), caring (Puig de Bellacasa, 2017) and more-than-human perspectives on the world (Abram, 1996 and Wakkary, 2021).

Still, ambiguities remain in how art and design universities define ‘regeneration’ or ‘regenerative design’ (Mang & Reed, 2020) and they continue to approach this terrain from an experimental, creative standpoint rather than from predominantly theoretical or empirical directions. It is clear therefore that art and design institutions have not simply *adopted* regenerative frameworks (from, say, agriculture, forestry, systems sciences or even architecture and planning) – they have instead tried to *adapt* the regenerative paradigm to suit their critical-creative practice-based contexts, exploring the myriad possibilities of

regeneration experimentally without necessarily articulating the emerging meanings through a cohesive vocabulary as of yet.

## **Regenerative values, ecological (systems) imagination and speculative design: A fertile soil for collaborating with more-than-humans**

What can be said about the more specific intellectual currents and philosophies shaping art and design schools' approach to regeneration? First, we may point to a set of regenerative values as one key current. Referencing living systems principles, these values call us to view the living world (or biosphere) as consisting of nested wholes ('whole systems'), built on intricate interrelationships and mutual interdependencies (see Karana et al, 2023). Whether observing a meadow, forest or a mangrove swamp, the living systems we witness – and participate in – emerge through the complex and sensitive co-orchestrations of multiple species, as polyphonic assemblages, as described in Anna Tsing's influential account on the *matsutake* mushroom (Tsing, 2006, p.157). As for regeneration, it is accepted that the living world is inherently able to regenerate itself over time *but* its ability to support and enhance the conditions required for life to thrive have been extensively damaged by recent human activity – hence the need for regenerative and restorative participation. These assumptions combine with the idea that the world is fundamentally 'more-than-human' and that our own ways of being – as experiencing creatures – are deeply entangled with the living world (Abram, 1996; Toivonen, 2024). The broader regenerative theoretical landscape of art and design schools is strongly coloured by (non-designer) philosophers such as Latour, Haraway, Abram, Puig de la Bellacasa, Deleuze & Guattari, Foucault, Ingold and Escobar among others, forming a rich universe of intellectual and creative inspiration for developing non-mainstream approaches to design and innovation.

Second, we may also point to something more specific called the ecological imagination. For the ecological philosopher Steven Fesmire, this term denotes a form of 'mental simulation organised by metaphors used in the ecologies' (Fesmire, 2010, p.189). At one level, the ecological imagination is highly beneficial as it allows for 'dramatic rehearsals' (John Dewey) where ideas and actions can be tested and tried out in the imagination, without fear of failure or costly experimental processes. Fesmire emphasises that at its root, the ecological imagination is not reducible to the use or cognitive rearrangement of ecological metaphors (as important as this can be) – rather, it is rather about *relational imagining and perceiving* (Fesmire, 2010, p.198). As such, it is a key human faculty capable of revealing 'the relationships that constitute any object on which we are focusing' (whether a bee, flower or mycelial network), helping us to understand them through 'connections distant in space and time' (Fesmire, 2010, p.198). This can alleviate the distortions and destructive actions that

ensue from narrow anthropocentric, object-centric, extractivist and Cartesian ways of perceiving the living world and our place within it:

‘We cannot respond to what we do not perceive, so cultivating ecological imagination can help us to deal more responsibly with the global scene of human impact on the natural environment and our aesthetic disconnection from encompassing natural and social relationships’ (Fesmire, 2010, p.199).

Arguably, this rendition of ecological imagining resonates strongly with ecological and regenerative systems thinking approaches to perceiving the ‘web of life’ (Capra 1996) and with notions of ‘interbeing’ (Thich Nhat Hanh 2020; Wahl 2016). It also resonates with the radical work of more-than-human ecological thinkers such as Haraway, Tsing, Braidotti, Puig de Bellacasa and others who have set a new and much more expansive and open stance for ecological (re)imagining, going beyond the typical ecological and trophic relations metaphors foregrounded by Fesmire into much more profoundly relational, post-anthropocentric, care-based and co-evolutionary territory. Still, what is useful about Fesmire’s contribution is its explicit focus on the *process of perceiving and imagining* (as opposed to their outcomes or complex theorising), which in our view is essential to exploring and understanding how regeneration-focused creative processes unfold in the context of art and design schools in particular.

How *do* students speak about a focal living system in the context of their studio work and what *are* the patterns and possibilities revealed (and concealed) by that specific act of ecological imagining?

When moving from the ‘ecological’ to the ‘regenerative’ imagination, we find that a primary difference is that the regeneratively oriented creator or group will be ultimately searching for (and elaborating, validating) certain *regenerative potentials*. In short, these translate to opportunities to participate in naturally-occurring biological and ecological processes in a way that supports life’s ability to regenerate and sustain itself while often also speaking to human existence. For instance, a team might be aiming to understand the biological and ecosystem behaviours and qualities of particular varieties of seaweed, while considering local sourcing options and CO<sub>2</sub> absorption possibilities in the context of supporting thriving ecosystems. They might then find that seaweed can also be turned into product packaging that is easy to biodegrade. Any positively regenerative impacts of such a project (or startup) would ultimately hinge on multiple rounds of iterative experimentation and validation; in any case, the beginnings of this process always originate in unique instances of inspiration, imagination and perception (regardless of the fact that participants may lack ecosystemic or biological knowledge depth at this stage).

Many art and design school faculty might agree that their institutions indeed offer a fertile ‘soil’ for collaborations and co-creative activities with biological non-humans, conducted as far as possible from a position of ontological equivalence (Ingold, 2001/2021) and an ethic of care (e.g., Connolly & Cullen, 2018). Another way to provisionally explain the existence of this catalytic environment is through the (relative) *absence of conceptual and practical obstacles and inhibitors*: art and design school members are *not* told that humans and the environment are fundamentally separate (or that the latter amounts to ‘natural resources’ for human exploitation); they are also *not* told to refrain from engaging directly and experimentally – even animistically – with non-human life and technology<sup>3</sup> (Marenko & van Allen, 2016); and neither are they told to stop applying their imaginations to perceiving relational patterns and possibilities that might or might not currently exist<sup>4</sup>. Finally, they are *not* told to avoid prototyping or materialising their (often unconventional, even outlandish) ideas, however imperfect the results. Such institutions do not suffer from the presence of conservative economics departments, nor are they dominated by functional or overly anthropocentric engineering mindsets (often based on an ‘incremental innovation’ mentality rather than radical creativity) or the scientific paradigm as such, and students are required to develop a deep sense of criticality as well as originality through their practice. To elaborate further: art and design processes do not typically begin with logic. While science is defined by the scientific method and engineering by a problem-solving mentality and data-driven orientation, art and design often move beyond narrow scopes, technocentrism, empirical protocols, and feasibility concerns. Art and design students seek to be unique, often embracing radical breaks from the past and established methods. Art and design are also open to ‘nonsensical’ and unconventional ideas, with playfulness being a valued approach. Art and design approaches tend to welcome exploratory processes engaging with living systems that prioritise regenerative potentials in an open-ended manner rather than any other parameter or a given method, allowing unique avenues of exploration and process. Art and design, driven by boundless imagination, do not merely depict the world—they actively create new ones. Art and design are characterised by an increased level of curiosity which intrinsically comes with confusion, mistakes and failures.

As reflected in the popularity of speculative methods and discourses within art and design schools (e.g., Dunne & Raby 2013; Malpass 2013; Auger 2013), students and faculty are

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<sup>3</sup> Arguably, artists and designers are pioneers in applying indigenous perspectives that recognise materials and objects are imbued with intrinsic agency, aliveness, interconnectedness, spiritual significance.

<sup>4</sup> For a regenerative imagination to reach its full potential, a sensuous (Abram 1996), aesthetic sensibility is arguably required. Creators need to be *willing to imagine* that there may be qualities, resonances and possibilities that exist just below the level of conscious awareness that can be brought forth through this active process of perceiving, relating, creating, revising and so forth (also see Toivonen 2024).

actively encouraged to transcend existing boundaries and speculate imaginatively about future scenarios, including those conceived from a non-technoscience perspective (inspired by the likes of Braidotti and Bayley). They are furthermore asked to be *explicitly values-driven* and to *radically experiment* in their work.

These intellectual currents, imaginative practices and receptive (relational yet critical) cultures go some way towards explaining why art and design schools are able to cultivate the regenerative imagination and how this (sometimes) yields promising applied projects and enterprises with regenerative goals<sup>5</sup>. Next, we offer a brief case study that exemplifies how relevant projects can emerge in practice.

### **Case vignette: The emergence of ‘Listening to soil AI’**

Four students of an interdisciplinary design masters course at a leading art and design school chose poor soil health as the focal problem they would address through their main project, ‘Listening to soil AI’ (pseudonym). The team's starting point was their passion for healthier agricultural practices. They recognised soil as a vital ecosystem deserving protection through new practices. They possessed advanced (pre-existing) knowledge in the fields of industrial design, advertising, engineering and robotics and demonstrated considerable curiosity and drive. After researching soil depletion and the role of nitrogen-based fertilisers and how farmers had become dependent on polluting practices and chemicals, they identified *ecological acoustics* as a promising avenue towards a design-based solution – an AI-powered device that could measure soil quality and biodiversity more conveniently than existing chemical tests.

Critically, none of the students were trained in biology or ecology, but one of their dedicated tutors did come from a biology and design background. She strongly challenged the team to reconsider their terminology (e.g., ‘supporting’ rather than doing regenerative agriculture); extensively consult scientific experts (including soil researchers); conduct fieldwork and interviews with farmers (to ensure their perspectives would directly inform the product); and work harder to understand biological complexities, avoiding ‘algorithmic oversimplifications’ of biodiverse populations and other soil health dimensions. This helped trigger what might be called a ‘relentless’ transdisciplinary process, energising the ecological imagination of the

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<sup>5</sup> For a more rigorous, substantiated account of these influences, further work will draw on in-depth interviews with students, staff and project teams to unpack how specific influences of art and design education have shaped and fed into tangible projects. We expect for the ethos that helps cultivate the regenerative imagination to be ‘differently configured’ across different institutions (and times); we make no assumptions about this ethos or supportive soil to be uniform across the field, although we would expect it to share common core beliefs, practices and characteristics.

team. They went on to establish a relationship with a specific farm and strong transdisciplinary engagements with soil scientists and AI experts. This transformed the team's original idea into something more relationally rich and multispecies-based. The result was a viable prototype that the students are now thinking to advance through further iterations.

## **An emergent modality that is distinctive from science and engineering approaches (but necessarily collaborative)**

In this short paper we started unfolding a new kind of regenerative imagination that is emerging within art and design schools. This imagination is directly shaping the applied projects and startups they are helping to create. In our presentation, we will reflect on the 'uniqueness' of this approach *vis-a-vis* that seen in science and engineering-driven cases. This will entail considering how creators cycle back and forth between analytical, imaginative, relational and aesthetic modes of engagement, and how the regenerative design process is necessarily transdisciplinarity. In particular, we will consider how such processes incorporate biology, ecology, the material sciences and chemistry, while building on a relational perspective that resonates with more-than-human, living systems and multispecies theorising. Our aim will be to test and substantiate the argument that applied regenerative projects emanating from art and design schools indeed are shaped by the latter's ability to cultivate a peculiar kind of regenerative imagination and that this imagination is worth examining – from a relational *process* perspective – for the benefit of designers, organisations and societies more widely.

One caveat to this paper is that, as hopeful and positive as we are about all of the above, we remain fiercely critical of the many limitations, tensions and problems that affect art and design education presently, including neoliberal short-termism and severe underinvestment in teaching staff. Neither are we claiming that art and design institutions somehow play a 'superior' role in sustainability and regeneration compared to science and engineering universities (that focus more on fundamental science, incremental research and innovation rather than radical originality, relationality and the imagination). No – our primary interest is to reach a better understanding of respective (disciplinary) strengths via comparisons. We also want to stress that regenerative imagination and implementation fundamentally require multi- and transdisciplinary collaboration. These are topics that we will return to in future work.



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