

Digitally Mediated Micro-environment as a Vector of Environmental Closeness

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Abstract

This article examines how technologically mediated micro-environments reconfigure human–plant relations and environmental closeness in the Digital Anthropocene. While current debates on the digital observation of nature have primarily centered on fauna, we address a gap in biopolitical framing by speculating on the possibility of attributing agency to plants in technologically mediated environments. Referring to Baudrillard’s hypernature concept, Foucault’s biopower, Vogel’s post-naturalist environmental philosophy, and affective ecology, we inquire: Can a digitally mediated micro-environment evoke affective responses comparable to real nature? How might such installations reassert the primary human right to nature and what new aesthetics or ethical laws emerge in the process? Observing that environmental closeness is always already mediated, and that vegetal life is increasingly enrolled in regimes of care, commodification, and control, we adopt Critical Discourse Analysis to read selected art and design projects as cultural texts that script human-plant interaction. Our examples, ranging from miniature domestic ecologies, through mobile and site-specific gardens, to technologically organized, plant-media telematic systems, reveal three recurrent modalities: (1) miniaturisation and control, (2) domestication and commodification, and (3) technological entanglement. Across these modalities, we identify three core paradoxes structuring mediated plant relations: care vs control, intimacy vs commodification, and agency vs instrumentalisation. In conclusion, we propose an approach acknowledging media interfaces as tools redistributing environmental proximity while also governing plants as vegetal commons. This state can be further negotiated through progressive media designs and frameworks, allowing for the attribution of agency to plants. This approach enables to reframe the right to nature as a right to companionship and presence, introduced through the suitable protocols of care.

Keywords: environmental closeness, affective ecology, Digital Anthropocene, micro-environments, human-plant relations

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Introduction

Across many nations, the public's right to nature is embedded in constitutional provisions, yet this right is increasingly exercised through screen rather than soil. As ubiquitous planetary data now shape our perception of environment, public access to nature is no longer a matter of physical proximity but of digital mediation. Such mediation signifies an epistemic shift: climate change is not just a planetary crisis of ecology but also a crisis of mediation and imagination.

Since the rise of modernist urban culture, our access to nature has long been mediated through parks, gardens, museums, and horticulture spectacles that domesticated wilderness within the logics of aesthetic and space control. Digital Anthropocene further intensifies mediation through technological interfaces that reconfigure our proximity to nature. Nature is encountered as data-driven perception, mediated spectacle, or prosthetic apparatus; plants become the protagonists in the narrative of nature redistribution. This manifests as hypernature, a sub-phenomenon of Baudrillard's (1983) hyperreality, where staged ecological experience replaces direct contact with its digital or cultural proxy.

Vogel's post-naturalist environmental philosophy (2015) reframes our cognitive longing for ecological closeness as an urge to reclaim lost access or lost connection. Furthermore, in his critique of *climatism*, Hulme (2023) warned that when the global climate crisis is reduced to an all-encompassing explanatory framework as an alarm, it risks becoming moral blackmail and narrowing our creative horizons, leaving little room for alternative forms of meaning-making or relational thinking. Our intervention builds on von Essen et al.'s article *Wildlife in the Digital Anthropocene* (2023), which highlights how surveillance ecologies (i.e., trail cameras, drones, GPS collars or live-streams) define human–animal relations. Using selected case studies of different animal species, these authors emphasise that encountering wildlife through screens and platforms, while producing digital intimacy, also stimulates regimes of biopower. In their optics, techno-mediation preconfigures the gaze, curating what we perceive as “wildlife” and stabilising it through reductive representations that further shape public-wildlife relations. We follow those analytical footsteps but shift the focus from animals to plants, tracing the rationales of vegetal biopower across regimes of care, commodification, and control; each raising paradoxes of intimacy and abstraction, autonomy and dependency. Grounded in environmental philosophy and affective ecology, we propose rethinking plants beyond their subordinate positioning in species hierarchies, recognising their capacity as co-agents that shape emergent forms of civic, aesthetic, and ecological imagination in the Digital Anthropocene. The research gap highlights the observation that, compared to human-animal relations, human-plant relations remain understudied in biopolitical discourse and the digital media context. While wildlife has received growing attention in digital mediation discussions, the equally complex and biopolitically entangled domain of human-plant requires further attention.

We specifically focus on art and design practices as civic laboratories – spaces where ecological values can be negotiated, where civic imagination can expand beyond protest or policy, where sensibility can be cultivated. By analyzing these creative endeavours that transform vegetal life into sites of mediation, speculation, and political reflection. We speculate on a civic right to nature while calling for a more honest recognition of the mediations and power arrangements that structure human-plant relations in the climate era.

Literature Review and Framework

Invoking Foucault's thoughts on security, observation and surveillance, we can indicate that the same logic of governance applies to plants by various actions focused on optimising, commodifying and surveilling natural life. Biopower establishes the rules of interaction with biological systems, governing approaches to care, consumption, and circulation. Foucault's security apparatuses define organisation and planning, optimising populations through deliberate fields of interventions (Foucault, 2007). Reading his discourse through plants, it is possible to highlight socio-cultural practices that oscillate around disciplining vegetal life, notably in the context of bonsai art, which features miniaturisation and growth control (Koreshoff, 1984), or ornamental gardening, where plants are framed as objects of aesthetic consumption (Altman et al., 2022). This perspective also applies to the rise of plantfluencers, who incorporate plants into stylised eco-performance, extending cultural norms of care and display to "plant parenting" (Tscholl & Sturm, 2022), focused on emotional connections built by humans around plants. Here also should be mentioned biophilic design, operating on environmental features, natural shapes and forms and place-based relationships in the context of spatial planning (Kellert, 2008). Finally, bioart and plantart, such as the canonical *The Telegarden* installation (Goldberg & Santarromana, 1995–2004), utilise telematic monitoring and teleoperation to render plant life observable and malleable remotely through networks. In this context, the issue of human-plant relationships calls for acknowledging the power structures and the inadequate framing of the practical application of thinking patterns regarding human power over plant species.

Vogel (2015) further frames nature as a human-shaped "always-ready" environment that makes us custodians and cohabitants, responsible for designing sustainable coexistence, beyond the mental construct of a pristine pre-modern state, which is not an actual possibility. Acknowledging that the environments are socially constructed and collectively made through practice, he calls for establishing new norms for design and framing of cohabitation within hybrid ecologies. In this perspective, the ethical questions shift from defining the principles of "natural" to establishing a set of possible practices that govern the contemporary approach to nature. This framing also emphasises the need to distance oneself from the techno-romantic (Coyne, 1999) perception of technology as a portal to immediate, pure access to nature, while obscuring mediations such as infrastructure or market needs. Contemporary computing culture, treating plants as commodities and masking biopolitical regimes, recycles romantic tropes within digital interventions, promising total visibility and immersion rather than plant welfare. Here, McLuhan's utopian vision of integration through electronic communication – in this case with nature—doesn't consider situated interfaces based on distributed, localised agency and reciprocity protocols, converting attention into responsibility.

Framing the possible approaches to the discussion of environmental closeness, we organise our perception of human-plant relations around analytic registers of affective ecology, which comments on distributed obligations and considers affect as a relational force distributed across bodies and media instead of individual emotions. Environmental narratives circulate around coproducing sensibilities and new ethics, rather than analyses of representation, to reorient perception into world-forming actions that have political consequences (Weik von Mossner, 2017). Even though in the optics of the above-mentioned framework, intimacy is inseparable from the notions of power, we can track how vegetal biopolitics is shaped, communicated and tied to media affordances and conditions. At this juncture, Ascott's conception of "planetary as telematic" provides a crucial counterpoint to suggest an emerging planetary consciousness within cybernetic interdependence characterized by communication network, reciprocal

sensing and co-creation feedback among humans, machines, and more than human entities (Ascotts, 2003). Such an approach resists both techno-romantic immediacy and idealized global unity but reframes digital-ecological engagements as responsibility circuits that call for ethically attuned ecologies which foreground mediation, relationality and reciprocal affect.

Methods and Case Studies

We adopt a Critical Discourse Analytical (CDA) approach, treating mediated representations of plants as discursive artifacts that construct ideological positions around nature. Rather than approaching each work solely as an aesthetic production, CDA enables us to read them as cultural texts that give material expression to the politics embedded within human-plant relations in contexts of mediation. This approach allows us to analyse how formal decisions, whether in scale, site, or medium, encode shifting ecological imaginaries, from containment and proximity to connectivity and computations. We analyse the selected works based on the following discursive strategies:

1. Framing: representation of plants as subjects, commodities, or collaborators.
2. Lexical and material choices: “care,” “stewardship,” “optimization,” and “companionship” embodied in aesthetic form.
3. Materialisation: how scale, medium, and technology construct and mediate ecological discourse.

To make this reading more concrete, we organized these case studies along a continuum of mediation, ranging from miniaturized domestic ecologies to mobile and site-specific networks, and, lastly, to cybernetic or network systems. This progression reveals how mediation and digital culture reconfigure human proximity to plant life and the emergence of new civic imaginations.

Results

Miniature Ecologies: Containment and Control

At micro-scale, practices such as bonsai, ikebana, aquascaping, fairy gardening, terrariums, represent early forms of controlled ecological intimacy. These traditions compress landscapes into symbolic miniature and dissolve the boundaries of local and remote. However, these approaches to vegetal life rarely include questions about agenda and identity, often objectifying plants as mere parts of interfaces or decorations.

Among contemporary examples, Alain Verschuere’s *Oasis Portable* (2020) stages miniaturisation and controlled vegetation as a pandemic-era “bubble”: a wearable micro-greenhouse that cocoons the body in plants and purified air. The work heightens multisensory encounter (scent, humidity, enclosure) while underlining a biopolitical logic of self-optimisation in public space. Here, the mobile garden, enclosed in plexiglass, performs the double movement of intimacy and discipline. While offering the user a safe bubble, it simultaneously confines vegetal life to a portable container, contravening plants’ constitutive rootedness and reconfiguring their ecology as a transportable display. Similarly, Paula Haye’s *Nocturne of the Limax maximus* (2010–2011) and Mark Dion’s *Neukom Vivarium* (2006–) aestheticise containment of biotopes and replication, transporting ecosystems into sculptural or architectural spaces. Despite the intention to bring attention to the cycle of life and to present contact with nature as an urban planning-related process (Sanyal, 2023), these miniature and institutionalized gardens visualize how ecological care becomes procedural, mediated, and

supervised – the epitome of Foucault’s biopower operating through aesthetic governance. Chiu Chih’s *Survival Kit for the Ever-Changing Planet* (2013) albeit a speculative wearable plant-life support system that aestheticizes dependency between human and vegetal metabolism, reverses the logic of enclosure by conceptually shifting the politics of control from domination to symbiosis. Chiu transformed the closed circuit of biopolitical control into an ethical circuit of co-breathing and cohabitation.

Mobile and Site-Specific Ecologies: Distribution and Mediation

Mobile media and locative technologies redefine the spatial conditions and distribution of ecological experience. Erin Despard and Oliver Kellhammer’s *Other Gardens* (2010) framed overlooked ruderal landscapes as a garden and plotted them as a distributed garden that can be experienced through an immersive online map or in person through a garden tour.

Other Gardens enacts a discursive shift from containment to distribution, navigation and embodied experience. The artists contested the definition of garden and reframed the garden at urban sites as a self-organizing ecology rather than a human artifact. In the mobile experience option, the audience can navigate the curated gardens through disembodied virtual movement and “immerse” themselves in those gardens mediated through visual, sound, text, and the neighbourhood’s third-person narrative. Nature is reconstructed as a networked, mobile image of itself. On the other hand, the artists subvert the very notion of disembodied mobility by organizing a guided tour of those gardens to facilitate an embodied, in-situ sensorial experience. *Other Gardens* thus sits at the intersection of civic intervention and eco-regeneration, where participation and mediation redefine reality, care and ownership.

Cybernetic Ecologies: Telematic and Algorithmic Agency

At the macro or systemic scale, we can highlight two modalities in the artistic approach: the domestication/commodification of plants and technological entanglement, which allow monitoring and programming plants through telematic means. Goldberg and Santarromana’s *The Telegarden* (1995–2004) let online participants plant, water, and watch a remote garden via a robotic arm. Similarly, Poupirev et al. (2012) in *Botanicus Interacticus* proposed an augmented garden, turning plants into interfaces that respond to touch and create music. In Usman Haque’s *Natural Fuse* (2008), the collective network of plants produces energy for the city and acts as circuit breakers to prevent carbon footprint overload, speculating on the possibility of managing collective energy usage. The gallery premises also become spaces for more complex bio-technological designs, such as Gilberto Esparza’s *Plantas Autofotosintéticas* (2017), which refers to a utopian sustainable city where plants produce alternative sources of energy and process contaminants from sewage.

At this scale, the vegetal is no longer a replication of nature, nor is it a static representation image, but becomes a dynamic sensorium of the planet. The most radical manifestation of this is found in Terra0’s *Self-owned Forest* (2016–), where sensors, network, blockchain converge to prototype attributed agency, algorithmic personhood and multispecies governance (Seidler et al., 2016). Agnes Meyer-Brandis’s installation *One Tree ID – How to Become a Tree for Another Tree* (2025) translates a tree’s biochemical exchanges into olfactory communication. This biopoetic attempt at finding an interspecies language presents the scent as atmospheric signalling, curating the act of translation and reimagining interspecies empathy through data. In these two cases, plants or forests specifically are attributed with personal identity, legal and

financial autonomy, epitomizing a speculative future of multispecies governance. Plants are no longer treated as tools of governance and economic exploitation.

Discussion

The aforementioned examples of experimental cases show how art both redistributes environmental proximity and exposes the paradox of care as governance in the Digital Anthropocene. The visible aim to build a collective sensorium, while simultaneously involving a different biopolitical rationale deployed by the artists, allows reading those attempts through Foucault and von Essen et al., observing that the already-built milieus are optimised and under constant surveillance, which organises circulation inside the living systems. Taken our case studies together, we inquire that while these projects speculate on the possibilities to incorporate nature into the discourse on the right to a natural environment and, in selected cases, nature's rights and identity, they simultaneously install biopolitical rationales and protocols of control. This framing allows perceiving art, galleries, media platforms and wearables as climate interfaces, and plants as creative vegetal commons. The possible expansion of this optics could reframe civic argument from "right to natural environments" to "right to vegetal companionship and presence" in urban/mediated life, speculating about plants' identity and possible means to recognise their agenda.

The selected case studies crystallise three recurrent modalities of human-plant relations in the Digital Anthropocene: miniaturisation and control (a clampdown aesthetics of scaled ecologies and bounded micro-climates), domestication and commodification (a plant-care economy that aestheticises and merchandises intimate, self-oriented contact), and technological entanglement (plant-tech artworks that render, monitor and program vegetal processes at a distance). Each modality is curated through a different artistic or institutional regime, such as enclosure, consumption, or telematic operations, revealing the double movement by which artworks both redistribute environmental proximity and govern it, presenting ecological intimacy as situated arrangements. In the Digital Anthropocene context, technologically mediated human-plant relations foreground both the positive potential and the negative repercussions for public engagement with vegetal life in digital and offline spaces. The paradoxes of plant relations can be grouped around three sets of oppositions: 1) Care vs Control – where care involves control, restriction and discipline; 2) Intimacy vs Commodification – where closeness fosters spectatorship and commodification in capitalist society; 3) Agency vs Instrumentalisation – where purported bestowment of agency is actually mediated and constrained by technology. Care is enacted through constraining rules, as in the context of *Oasis Portable*, where they are sealed in the wearable container, or in *The Telegarden*, where access to telepresence is scheduled via a robotic arm. Digital domestication, following Kamphof's (2013) nomenclature, creates compatibility with access norms through sensing, visualisation and control systems, operating on appropriation and conversion of plants as media objects. The standardised care repacks intimacy as a performance, in which sensors program plants rather than represent them, thus operating through periodic interventions rather than offering unmediated contact. The programmable character of Earth, as observed by Gabrys (2016), dissolves remote boundaries, shifting from ontology to ontogenesis in contact with plants. The sensors and collected data instrumentalise vegetation by producing environmental relations and modes of participation, rather than reporting.

On the other hand, examples such as *One Tree ID – How to Become a Tree for Another Tree* or *Terra0* advance a productive attempt to expand beyond mere representation or governance, negotiating plants' agency. Meyer-Brandis, shifting the principles of language from morphemes

to atmosphere, deliberates on multispecies interface based on biochemical signalling beyond vision and voice – inaccessible to plants. Furthermore, *Terra0* shows how institutions and code can be remodelled to help establish legal personhood for biomes. The presented cases open new possibilities for prototyping multispecies protocols, distanced from green spectacles and extensive surveillance. Meyer-Brandis and Terra0's approaches showed at least two possible directions for new trajectories of incorporating nature into art. This includes further pursuit of interspecies ways of communication to build a non-visual, non-verbal dictionary and list possible sampling techniques (referring to One Tree ID), and treat sensor streams as a civic resource with possible market extraction (Terra0).

Conclusion

This paper examines the biopolitical implications of technologically mediated human-plant relations. We argue that ecological longing is always already mediated, and that artistic practices can redistribute environmental proximity by rendering plants materially and politically present if the approach to vegetation expands beyond moralising frames of stewardship, dominion, constitutional rights, and sentimental care. Our analysis shows that contemporary connections of art and technology still often instrumentalise nature, overlooking the discussion about agency, identity and biopolitical infrastructures that mediate human contact with vegetal. Reframing the presented artworks not as neutral representations but as governed scripts allows us to speculate on possible ways in which media and technology could foster transgressions of the aesthetic regimes and paradoxes we traced.

On this basis, we shift the right to nature from an abstract, romantic and human-centred claim into a shareable experience, practised between the species. In this optic, galleries and art spaces can act as interfaces themselves, also monitoring public negotiations over maintenance routines and digital access rules, turning curation into a participatory experience grounded in civic pedagogy – far from treating vegetation as a spectacle or educational resource. The invitation to the audience to co-author protocols based on feeling “with” plants, rather than “feeling plants,” could further negotiate perceptions of welfare, ethics, and contest visibility through surveillance.

Searching for ways to cultivate vegetal companionship, indigenous knowledge and local ecologies could provide inspiration for augmented caretaking and affective closeness. The act of placing nature in the exhibition space could also be framed by the practices of welfare-first design, by defining and minimising plant stress indicators and procedural safeguards perceived as the notions of respect. By foregrounding the contradictions and responsibilities of mediated contact with plants in an exhibition space, we reframe the display of nature as a reciprocal act of communication and mutual learning through programmable environments, opening the way for further speculative designs and future practical framing.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

Grammarly was used for proofreading.

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